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| | (==) UNKNOWN AIRCRAFT

(a= APPARATUS OF THE THIRD REICH

The book discusses the projects of unknown or little-known German aircraft of the Second World War ("tailless", "flying wings", "flying saucers", manned projectiles, manned intercontinental missiles, etc.), brought to mass production or incomplete. The publication is distinguished by the completeness of the coverage of the material. The book is intended for a wide range of readers interested in the history of aviation, and
specialists.

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APPARATUS OF THE THIRD REICH

UNKNOWN AIRCRAFT

Military equipment

V.M. Kozyrev, M.E. Kozyrev

Unknown aircraft of the Third Reich

Illustrated Reference

Moscow • AST • Astrel • 2002

UDC 623 BBK 68.53(4Gem) K59

Signed for publication on 18.04.01. Format 84x108 32. Offset paper. Offset printing. Conv. oven l. 2. Headset "Sagatop MaggomS". Circulation 10,000 copies. Order No. 4678.

All-Russian classifier of products OK-005-93, volume 2; 953000 - books, brochures

Hygienic conclusion No. 77.99.14.953.P. 002870.10.01 dated October 25, 2001

Kozyrev V. M.

K59 Unknown Aircraft of the Third Reich: Illustrated. ref. / V. M. Kozyrev, ME. Kozyrev. - M. Astrel Publishing House LLC: AST Publishing House LLC, 2002. - 512 p.: ill. - (Military equipment).

5VM 5-17-011266-1 (LLC AST Publishing House) 15VM 5-271-02955-7 (LLC Astrel Publishing House)

The book presents projects of unknown or little-known combat aircraft of Germany during the Second World War, brought to the stage of mass production, a prototype or not completed before the end of the war.

Brief information is given about the state of German aviation science during the war, about the aircraft programs of the Luftwaffe, about the structure of the Luftwaffe and the marking system for aircraft.

The book is intended for a wide range of readers, including specialists and those interested in aviation.

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Introduction

At the beginning of World War II, the Luftwaffe command, confident in the superiority of German aviation over Allied aviation, ordered aircraft manufacturers to develop a limited number of new aircraft in addition to those in service with BE 109, BE 110, He 111, Po 17, J and 52, ÿo 86, ÿo 87, etc.

However, starting from 1942-1943, when the Germans lost air superiority with the general change in the strategic situation, the German leadership began to intensify the search for a new secret weapon that could immediately change the course of the war. In this regard, the number of programs for the development of new types of aircraft has increased dramatically. Priority was given to jet aircraft (including those with rocket engines), composite aircraft, guided bombs, projectile aircraft, manned long-range and cruise missiles, etc.

The feverish work of German scientists and designers, which was often based on the “brainstorming” method, sometimes used in solving scientific and technical problems, eventually led to the emergence of a wide variety, and sometimes even exotic aircraft designs, made in the form "tailless", "flying wings" and "saucers", devices with rotary or rotating wings, etc. It cannot be said that everything created was a masterpiece, some of the new products belonged to dead ends, some of them were

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INTRODUCTION

was the modernization of well-known technical solutions, and sometimes direct borrowing from designers from other countries. However, along with this, there were advanced developments that became the basis for the emergence after the war of new types of aircraft for military or civil purposes.

This book provides information about little-known or completely unknown projects of German aircraft that participated in competitive programs, brought to the stage of mass production or a prototype, not completed due to the end of the war or suspended at the stage of preliminary design due to the changed situation on the fronts. This information may be of interest to both specialists and amateurs.

aviation.

The authors express their deep gratitude to the employees of the Moscow Aviation Institute — Professor, Doctor of Technical Sciences L.A. Kvasnikov and candidate of technical sciences S.V. Kanev for help in preparing the manuscript.

GERMAN AVIATION SCIENCE i

Chapter 1. German aviation science during the Second World War

The high potential of German aviation science during the war years was evidenced not only by the military equipment with which the Allied forces had to fight on all fronts, but also by the reports of intelligence agencies to the top leadership of the countries of the anti-Hitler coalition. However, during the occupation of the territory of Germany, quite unexpectedly for many specialists, a whole system of large research centers and educational institutions located in various parts of the country emerged.

By the beginning of World War II, the entire flowering of German aviation science was concentrated in several research centers, whose activities were carried out under the direct supervision of the German Ministry of Aviation (KIM). Among them from
worn:

- German Academy of Aviation Sciences (RAG. (President of the Academy - Minister of Aviation and Commander-in-Chief of the Luftwaffe Reichsmarschall G. Goering, vice-presidents: Secretary of State for Aviation and Inspector General of the Luftwaffe, Field Marshal E. Milch and Professor, Dr. V. Messerschmitt, head of the Messerschmitt company);

- Aviation Scientific Society. O. Lilienthal (trustee - G. Goering, honorary chairman - E. Milch);

— Center for scientific and technical information under the head of the aviation technical service (7\V);

— German Aviation Research Institute (RU), Berlin-Adlershof;

- Aviation Research Center. G. Goering (GRA), Braunschweig (Chairman of the Board - K. Tank, technical director of the company "Focke-Wulf", since 1942 - vice-president of the AG);

— Aviation Research Center, Munich (Chairman of the Board — W. Messerschmitt);

— Institute of Hydroaerodynamics named after V.I. Kaiser Wilhelm, Göttingen (Director - Prof. Dr. L. Prandtl, member of the BAG Presidium);

– Research Center Graf Zeppelin, Stuttgart;

– German Gliding Research Institute (RES), Darmstadt,

- Institutional Aviation Radio Communications, Oberpfaffenhofen;

- Automotive and Motor Research Institute;

— Technical Institute of the Luftwaffe Academy (TAG), Berlin-Gatow; A

- Technical; academy, Chemnitz.

Aviation specialists were trained at higher technical schools (Aachen, Berlin, The first Italian jet aircraft Braunschweig, Bre-Caproni-Campini No. 1 in flight men, Danzit, Darmstadt, Graz, Hannover, Munich, Prague, Stuttgart , Göttingen) and engineering schools (Berlin, Bremen, Esslingen, Hamburg, Konstanz, Magdeburg, Stettin, Thorn, Wismar).

The largest center was the German Aviation Research Institute (YU). It had departments of aerodynamics, gas dynamics, flight mechanics, aircraft strength, engine installations, thermodynamics and working processes in engines, research and testing of materials, instruments and air navigation, physical and electrophysical research, automatic control,

aviation medicine and equipment, a high-altitude laboratory for testing aircraft engines and their units under conditions corresponding to altitudes up to 9–10 km, etc. In addition to the above departments, it also included the Institute of Hydroaviation (Hamburg). The total area of all buildings and structures of the BUT, by the end of the war, was 70,000 m, the cost of these buildings was estimated at 16.7 million marks. By the beginning of 1945, the staff exceeded 2,000 people, among them there were more than 300 researchers and about 500 engineers and technicians. elliptical tube (AWT) with interchangeable working parts elliptical Caproni Campini No. 1 with undocked section, Zavsnenaya. with dimensions of 8x6 and 7x5 m (flow velocity in the working part up to 65 m/s), a transonic wind tunnel with a working part diameter of 2.7 m (flow speed up to 300 m/s), a corkscrew vertical tube with a working part diameter parts 3.75 m (flow velocity up to 22 m/s). The second largest was the Aviation Research Center. G. Goering (GEA), located in Folkenrode, near Braunschweig. He was engaged in research in the field of aero- and gas dynamics, the strength of aircraft structures, kinematics, as well as in the field of aircraft engines and aircraft weapons. The staff [RA] exceeded 1000 people. Laboratories were housed in 60 buildings scattered for the purpose of camouflage over a 6.5 km long area. In total, the GEA had 11 high-speed wind tunnels, 28 weapons laboratories, 8 engine laboratories, and several auxiliary workshops. The static test department had a number of well-equipped laboratories, which made it possible to carry out static tests of aircraft and individual units at loads up to 60 tons. m (flow velocity up to 90 m/s), supersonic pipe

(M = 1.8) with a square section of the working part 0.9x0.9 m, two supersonic tubes (up to M = 3-4) of a small section. In addition, there were underground special pipes with a length of 100 and 400 m. The latter with a diameter of the working part from 4.8 m to 7.2 m was intended for ballistic research related to the sighting of aircraft weapons.

The Institute of Hydroaerodynamics (AMA) consisted of departments of theoretical aerodynamics, gas dynamics, aircraft aerodynamics, development of wind tunnels, measuring equipment, hydraulic equipment, research into the cooling of aircraft elements and engines, aircraft design and strength, development and research of propellers. Of the 700 people on the staff, there were 40 leading researchers.

The AUA included a wind tunnel with a replaceable working part (7x4.7 and 5.4x4 m) and flow velocities up to 104 m/s, a transonic wind tunnel with a working part of 0.8x0.8 m and three supersonic ones (up to ÿ = 3, 2).

Research in the field of rocket science was carried out at the Rocket Center in Peenemünde (the coast of the Baltic Sea), the construction costs of which amounted to 300 million marks. There, rockets U 1, U 2, A4b, A9, A10, etc. were developed.

The Technical Institute of the Luftwaffe Academy (TAT) had departments of ballistics, chemistry, electrical engineering, communications engineering, aircraft motors and instruments, aviation technology, mathematics, mechanics, physics, and materials. Here, in addition to fundamental research, scientific and design work was carried out in the field of measuring equipment, shaped charges, aircraft armor protection, guided torpedoes, aviation anti-submarine mines, internal combustion engines for underwater vehicles, aircraft electrical equipment, etc. .

Organizationally, the institute was subordinate to the command of the academy, and the work was carried out on orders from KIM, the Luftwaffe and many aviation firms. The director of the institute was annually selected from among the heads of departments.

The Research and Testing Institute of the Luftwaffe was located in Rechlin and had the following departments: aircraft, aircraft engines, aircraft weapons, propellers, radio engineering, ammunition, aircraft armor protection, pyrotechnics. It was the main German military center in which state and acceptance tests were carried out.

 for new aircraft and aircraft engines, the Center had two airfields, occupying a total area of 7 km? Its staff included 3,200 people, including 700 scientific and engineering workers.

Research work commissioned by the Luftwaffe was carried out in most universities and higher technical schools in the country. For example, in Aachen - aerodynamics, in Berlin - aviation technology, aircraft engines, electrophysics, materials research, in Braunschweig - aerodynamics, aircraft construction, aircraft engines, measuring technology, aviation meteorology, hydraulic equipment, in Darmstadt - aerodynamics, materials research, measuring technology, in Graz - aeromechanics, combustion processes in engines.

In Hannover, they dealt with issues of aeromechanics, aviation technology, in Munich - aircraft and automobile engines, in Stuttgart - material production technology, inorganic chemistry, lifting technology, materials research and metallurgy.

Specialized institutes that were part of the universities: Berlin - physicotechnical, chemical-technical, optical; Göttingen - physical (first and second), mechanics, physiology, theoretical physics; Jena - physical and technical; Cologne - physical; Leipzig - physico-chemical; Marburg - metallurgical chemistry; Munich is physical; Strassburg - theoretical physics; Halle - theoretical physics; Ernlangen is physical.

In addition to the state, there were also private research centers owned by aviation firms.

The experimental design base and laboratories of the Heinkel firm, located first in Rostock, and then evacuated to Stuttgart and further to Austria, were a whole complex, which included: a design bureau, const

Drawings and equipment in a research laboratory

GERMAN AVIATION SCIENCE

Engineering Bureau, Experimental Bureau, Test Flight Bureau, Improvement Bureau, Production Preparation Bureau, Laboratory for Static and Dynamic Strength Tests, Laboratory for Physical Tests under Variable Temperature Conditions, Laboratory for Research on Corrosion and Anticorrosion Agents, Laboratory for Combustibles and Lubricants materials, a laboratory for testing flight safety equipment, an X-ray research laboratory, a flight test station, two wind tunnels, and a jet engine testing laboratory.

The experimental design base of the Junkers company in Dessau was a large scientific research institute, which included an experimental aircraft building and two engine building plants, a number of research laboratories. This entire complex was located on a territory with a total area of 59 hectares and had a large staff of employees (for example, 1,200 people worked in the design department alone).

The VMY company had a main design office and a central experimental station at the company's leading aircraft engine plant in Munich, where the high-altitude

laboratory for testing jet engines. The second design bureau, located first in Berlin (Spandau), and then in 1944 evacuated to Stassfurt, had a design department, a department for testing engines (including jet engines), a laboratory for testing instruments, pilot production, a department for flight tests. The total number of employees of departments and laboratories was 1700 people. In addition, there was also a design bureau on the basis of the experimental design plant (Unzenburg), located underground in old salt mines.

The Focke-Wulf firm had a research department, which included 250 designers and 350 scientists and engineers.

Other leading German aviation firms also had their design bureaus and research departments: Messerschmitt at the leading plant in Augsburg, Dornier at the leading plant in Friedrichshafen, Blom and Voss in Hamburg, etc. d.

In total, in Germany in 1943 there were 51 wind tunnels, of which 8 had subsonic flow velocities and 8 were supersonic.

Immediately after the occupation of the western regions of Germany, the Allies organized a special service (SIOS), which was engaged in the search and collection of technical documentation and samples of captured equipment. The collected materials were sent to London, where the headquarters of CIOS was located. The scale of the work carried out is evidenced by the fact that the weight of all collected documents amounted to about 12 thousand tons. Of this total, after a thorough study, about 250 tons were selected, mostly secret documents and drawings. Most of them were transferred to the US Army Aviation Research Center (Wrightfield, near Dayton, Ohio).

Captured equipment was transported in large quantities to the United States, where in Freemanfield (Indiana), the Army Aviation Technical Service created a center for the study of German aviation technology. Another center dedicated to the study and testing of captured missiles was created at a specially selected site in the desert area in White Sand (New Mexico). The management of the testing of equipment was carried out by a joint bureau, which included representatives of the army, navy and civilian research organizations of the United States. A

The equipment of German research centers was widely used by the Allies. For example, the GRA was completely transferred to the jurisdiction of the British Ministry of Aviation Industry, part of the equipment of this institute was taken to England. The Americans transported to the United States a wind tunnel, which was previously located in the Munich area, and installed it in the naval artillery laboratory in White Oak (Maryland). The French removed the unfinished supersonic tube from Otztal.

In addition to equipment and aviation technology, the Allies evacuated German leading scientists and designers in large numbers, there were about 1,000 of them in the USA alone. Scroll

Scavenging rocket models

The names of professors and doctors of sciences taken to the West indicate that the entire elite of German aviation science and technology ended up there (in contrast to the Soviet Union, where they took out mainly ordinary specialists), here are some of them:

— W. von Braun — one of the leaders of the Rocket Center in Peenemünde (after the war in the United States, under his leadership, the Redstone and Jupiter rockets, the Earth's Explorer series artificial earth satellites, and *Sa- series launch vehicles were developed; turn", spaceships of the Apollo series);

— A. Busemann (IA) — a prominent specialist in the field of gas dynamics and high-speed aerodynamics;

— V. Georgiy — Director of the OE, member of the Presidium of the RAS;

- C. Dornier - founder of the Dornier company;

— E. Zenger — developer of the concept of the world's first aerospace aircraft;

— A. Lippish — well-known aircraft designer, creator of the Me-163 rocket fighter, developer of the first supersonic aircraft;

- V. Messerschmitt - Vice-President of the BAG, Chairman of the Board of the Aviation Research Center (Munich), head of the Messerschmitt company;

— L. Prandtl — Director of the AUA, member of the Presidium of the Russian Academy of Architecture, world famous scientist in the field of aerodynamics and heat transfer;

— K. Tank — well-known aircraft designer, technical director of the Focke-Wulf company, chairman of the board of TEM, vice-president of RAI;

— G. Focke, a well-known aircraft designer, one of the founders of the Focke-Wulf and Focke Ahgelis firms;

- E. Heinkel - head of the company "Heinkel";

— G. Schlichting — head of the aerodynamic department of the Higher Technical School (Braunschweig);

- F. Schmidt - a leading specialist in the field of creating turbojet engines (RUT.);

- T Zobel - head of the department of high speeds of the GRA.

AIRCRAFT PROGRAMS OF THE LUFTWAFFE

Chapter 2 Aircraft Programs

Luftwaffe

"Bottler-B"

In the summer of 1939, KIM issued a technical assignment for the development of a new medium bomber with a range of up to 3,600 km. This made it possible to reach any point in the British Isles from German bases in France and Norway. The bomber was supposed to have a crew of 3-4 people, be equipped with two OV 604 OR 1000 222 engines, carry 2000 kg of bombs at takeoff weight

- - 20,000 kg to develop a maximum speed of 600 km/h at altitudes of 6000-7000 m. metrical, as a defensive | armament provided for the use of remotely controlled machine-gun installations.

The firms Arado (Ag 340), Dornier (Rho 317), Focke-Wulf (EZ 191), Junkers (Ji 288) and Henschel participated in the competition. After consideration of the submitted projects in July 1940, experimental machines Oo 317, Eÿ 191 and ÿi 288 were ordered for further research, later

work on ro 317 stopped. Bombard - Anti-aircraft missile PIROVSHIKI ÿÿ 191 and ÿÿ 288 were built

E55 on launcher Serially. installation

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AIRCRAFT PROGRAMS OF THE LUFTWAFFE Project "X"

As part of the top-secret "Project X", a fighter-interceptor with a liquid-propellant rocket engine (LPRE) was developed. In 1939, A. Lippisch from Re, the Junkers firm, E. Bachem from the Fieseler firm, and also the designer of German missiles, W. von Braun, began working on the interceptor project.

Of all the listed projects, only the A. Lippisch project was further developed; in the summer of 1941, the first flight of an aircraft of his design under the designation Me 162 took place.

jet fighter

The development program for the first front-line fighter with turbojet engines began in the fall of 1938. The technical requirements provided for a maximum aircraft speed of 850 km/h and a flight duration of one hour. The firms Messerschmitt (Me 262) and Heinkel (He 280) took part in the competition. The decision to start serial production of the Me 262 was made in June 1943.

"Ategika-Botjegg"

The goal of the program, announced in 1941, was to develop a bomber capable of reaching the US Atlantic coast. It was assumed that as a scout, he could carry out reconnaissance, and as a bomber, carry up to 20,000 kg of bombs at a distance of 7,000 km or up to 4,000 kg at a distance of 10,000 km.

The firms Blom and Foss (VU R184, VU 250) and Messerschmitt (Me 264 and P08) participated in the competition. From the presented projects, VGM chose VU 250 and Me 264.

strike aircraft

In November 1942, requirements were published for a single-seat strike aircraft capable of carrying a 500 kg bomb at a speed of 790 km/h. At first, defensive weapons were not envisaged, but then additions followed with the requirements for the aircraft to perform the functions of a fighter-bomber.

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AIRCRAFT PROGRAMS OF THE LUFTWAFFE were presented by Arado, Dornier and Junkers. The winner of the competition was the Dornier project, designated ro 335.

"1000-1000-1000"

In March 1943, Greichsmarschall Göring, in a speech to representatives of the aviation industry, stated that he would not accept new aircraft projects unless proposals were received for a program to develop a high-speed attack jet aircraft. This program is better known under the name "1000-1000-1000" - that is, the delivery of 1000 kg of bomb load to a distance of 1000 km at a speed of 1000 km/h. A feature of this program was the requirement to ensure the low visibility of the aircraft, since for some time the allied forces

already had sufficiently powerful ground and airborne radar stations, as well as means of detection in the infrared range,

According to the terms of reference, the aircraft was to have two turbojet engines VMU/003ÿ, further

Launch At the insistence of the anti-aircraft fighter aviation command, the technical requirements were supplemented with missiles: the aircraft was to be equipped with a Mazzei-mi MK 103 cannon and perform the functions of a fighter-bomber. The competition was attended by: Team 9 (H IX), Focke-Wulf (EU 1000-1000-1000, projects A, B and C) and Messerschmitt (P1108 and MP1). The competition was won by the design of the H IX aircraft by the brothers R. and V. Hortenov, who led the “9” team.

"People's Fighter"

On September 8, 1944, KIM issued technical requirements to aviation companies for the development of a "people's fighter" (VoKz} aseg). This single-seat aircraft with one VMU / 003A turbojet engine was supposed to weigh no more than 2000 kg, have a flight time of at least 20 minutes, a maximum speed of 750 km/h, a take-off distance of no more than 500 m. It was supposed to use two guns as weapons caliber 30 mm. In addition, the machine had to be as simple as possible to manufacture.

AIRCRAFT PROGRAMS OF THE LUFTWAFFE, require a minimum of scarce materials and skilled labor. The pilots for these aircraft were to be trained by the Hitler Youth organizations, mainly from graduates of the glider school in Trebbin. The following firms took part in the draft design competition: Arado, Blom & Voss, Fieseler, Focke-Wulf, Heinkel, Junkers, Siebel and, on their own initiative, the 9 » take ev Hortenov.

As a result of the draft design meetings held on September 15 and 19, the P211 project of the Blom and Voss company was recognized as the winner, the second place was taken by the Heinkel project. However, already on September 23, E. Heinkel showed a model of his aircraft, and on September 30 he was given a contract to build a “people's fighter” He 162A.

"Tiny Fighter"

In November 1944, KIM, using the experience of creating a "people's fighter", issued technical requirements for the development of an even more simplified "baby fighter" (Mipiagigaser). The Az 014 pulsating engine, which was used on the Rÿ 103 (U 1) cruise missile, was planned as the power plant of the aircraft. According to the technical requirements, a minimum of scarce materials was to be used in the design, no electronic equipment was envisaged, the advantage in the air over enemy aircraft was to be achieved by producing a large number of aircraft. The pilots, as in the case of the "people's fighter", were to be supplied by the Hitler Youth. Three firms took part in the program: Blom and Foss (VU R213), Heinkel (Not 162B) and Junkers (Ji EE 126).

Wearable fighters and bombers

In 1941, KIM began a program to develop aircraft that take off in flight from a carrier aircraft or after uncoupling from a towing aircraft. Such an aircraft could be used both as a heavy bomber escort fighter and as a light bomber capable of penetrating a well-defended zone at low altitude.

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The operator controls the rocket "Maser"

enemy. In addition, a bunch of two aircraft could be used as a long-range reconnaissance.

To solve a number of problems that arose during the flight of a bunch of two aircraft (the method of attaching a portable aircraft, the features of its launch and return landing on a carrier aircraft, etc.), the German Gliding Institute (UE$) was connected to the program.

One of the first portable aircraft was the Me 328, the development of which began in 1942. Toward the end of the war, the number of portable aircraft projects with various engines (PUVRD, LRE, ramjet) increased dramatically: 50 344, REZ “Ereg”, “/erreip Katteg”, etc.

Object missile interceptor

At the end of the war, a program was adopted to develop small rocket-powered fighters whose sole purpose was to intercept Allied bombers in the vicinity of a protected facility. Object interceptors had to start from the ground or be launched in the air from a carrier aircraft or a towing aircraft.

The probability of mass losses of object interceptors when repulsing allied air raids was assessed as very high. Therefore, the technical requirements that came out in the late spring of 1944 provided for the maximum simplification of the design and the use of the cheapest materials in the manufacture. After discussion of numerous proposals, the Heinkel project He P1077 became the winner of the competition.

However, E. Bachem, the former technical director of the Fieseler company, who submitted his initiative project of the one-time missile interceptor BP.20 for the competition, managed to

 vouch for the support of G. Himmler. A day after the announcement of the winner of the Heinkel project, the proposal of E. Bachem under the designation Ba 349 was given the highest priority. In July 1944, the company "Bachem Werke GmbH" was created, which was taken over by the technical director of the company "Dornier" H. Bethbeder. Work on the Ba 349 began in August under the personal supervision of Colonel Knemeyer of the KEM Technical Department.

Beethoven program

The idea of creating composite aircraft (the “Mistel” scheme), which was a combination of an unmanned projectile aircraft and a small control aircraft installed on it, was considered at KIM back in 1941. Specialists of the KIM Technical Department initially rejected this idea on on the grounds that there is no practical application for it. However, already in 1942, on the instructions of the Ministry, the OE began to study the features of the flight of a bundle from a glider and an aircraft mounted on its back. Initially, the experiments were carried out with a Re 230 glider, and the KI 35, EX 56, and BE 109E were used as control aircraft. As a result, a decision was made to start flight tests of an experimental bundle of Ju 88A and BE 109E. The positive test results of this bundle became the basis for the adoption of the program under the code name Beethoven. As part of this program, in July 1943, the Junkers firm was given the task of preparing 15 copies of the Mistel-1 combat system (Ji 88A + BE 109).

In the spring of 1944, as part of the ÿU group of the KS 101 bomber squadron, a special squadron was formed, which began to receive Mistels. The squadron made its first sortie on June 24, 1944.

manned projectile

In the last year and a half of the war, the German high command turned to the idea of using manned projectiles against ships and well-defended ground targets on enemy territory. This idea was borrowed from the Japanese, from whom aviation detachments of suicide pilots (kamikaze) were officially formed from the end of 1943 (number

Rocket Kh-4

The number of dead Japanese kamikaze pilots by the end of World War II exceeded 5,000).

However, unlike the Japanese kamikaze pilot, the German pilot was instructed to leave the cockpit of the aircraft with a parachute after pointing the projectile at the target. Moreover, the KIM technical requirements for the development of a manned projectile aircraft contained clauses on the obligatory armoring of the cockpit and equipping it with means of quick escape, among which an ejection seat was also considered. At the same time, it was assumed that after splashing down or landing, the pilot would be picked up by special rescue squadrons, which were armed with Ei 156 light aircraft.

In practice, the chances of a pilot leaving the cockpit of an aircraft at a dive speed of up to 800–900 km/h and safely landing (or splashing down) were estimated by many German experts as one in a hundred. However, zealous supporters of this idea were the famous test pilot Hanna Reitsch and Germany's "saboteur number 1" SS Hauptsturmführer Otto Skorzeny.

In the fall of 1943, Luftwaffe officer Hauptmann Heinrich Lange led a small group of volunteer pilots to practice the technique of using “non-standard” attacks on enemy ground and surface targets, including attacks with the help of manned projectiles.

In October 1943, H. Lange met with H. Reitsch and Dr. Benzinger, head of the German Institute for Aviation Medicine. They have developed specific

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 provisions for the use of manned projectiles, which were then discussed with Deputy G. Goering E. Milch. Hanna Reitsch was instructed to present the final version of the proposals personally to A. Hitler, which was done on February 28, 1944. The result of the consideration of these proposals was an order to deploy work on the study of various “non-standard” attack methods on the basis of the experimental fifth squadron, created as part of the 200th bomber squadron (5./KS 200). This squadron had the unofficial name "Leonidos Staffel", which was reminiscent of the hero of Thermopylae, the Spartan king Leonidas, who died along with his detachment of 300 people in a battle with the thousands of troops of the Persian king Xerxes.

H. Lange was appointed squadron commander. The flight crew of 5./KS 200 consisted of about 70 people, 30 of whom were members of O. Skorzeny's team. The leadership of all work related to the formation of groups of suicide pilots and their development of attack methods was entrusted to the Chief of the General Staff of Zoli, General Korten.

The high command of the Luftwaffe initially considered the Me 328 aircraft developed by Messerschmitt for the role of a projectile aircraft. However, the tests carried out showed that the chances of a heavily loaded EM 190 to break through the air defense barriers of protected objects are small. Therefore, we decided to urgently develop a specialized small disposable fighter with a warhead (projectile aircraft), launched from a carrier aircraft in the air or from a ground-based catapult.

Of the large number of proposed projects (Arado - ArE 377 and AgE377a, Blom and Foss - VU R214 and VU MCER, Daimler-Benz - OV RE and OV RE, etc.), they chose the aircraft project developed in PES for serial construction - "Reichenberg" projectile.

Rocket X-4 under the wing of Yeshe-190 aircraft

In accordance with this program, it was planned to develop a fighter to combat Allied high-altitude bombers. According to the technical requirements sent to firms in July 1944, the aircraft had to be equipped with one Nez 011A turbojet engine, have a maximum speed of 1000 km / h at an altitude of 7000 m, a practical ceiling of about 14,000 m, armament - four MK 108 guns. : firms "Heinkel" and "Junkers" - one project each, "Blom and Foss" - two projects, "Focke-Wulf" and "Messerschmitt" - three projects each. Following the results of the meetings held on February 27 and 28, 1945, one of the Focke-Wulf projects, designated Ta 183, was declared the winner.

long range jet bomber

At the end of 1942, KIM considered that the VU 250 and Me 264, which were developed as "Ategika-rotBet", were obsolete. Terms of reference were issued for the development of a long-range jet bomber equipped with a ÿito 004V turbojet engine and capable of carrying 4,000 kg of bombs at a range of up to 7,000 km with a maximum speed of 900 km/h.

The Junkers firm was involved in this development, which began designing a bomber under the designation Ji 287 in the summer of 1943. However, during the design process, it turned out that the expected characteristics of the new aircraft were significantly lower than those required: it could carry a bomb load weighing only 3000 kg at a distance of up to 2000 km, design speed was 870 km/h.

At the beginning of 1944, KIM involved the Arado firm in this work, which began designing the Ag E.555 long-range bomber. The company developed 15 variants of Ag E.555 at once, seven of which were “flying wings”.

In the autumn of 1944, G. Goering held a meeting to discuss the state of affairs on projects ÿi 287 and Ag E.555. As a result of three days of discussion, the unsatisfactory state of affairs with the development of the bomber was noted. Representatives of the leading

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X-4 rocket engine tests

airline companies were ordered to submit new proposals on this issue by March 1945.

At the beginning of March, Junkers presented the designs of the modified ÿi 287 and the “flying wing”] and EE130, BMW - “SigaÿBotreg 1” of the usual scheme and “flying wing” “SigaÿBotbetg 11”, “Messerschmitt” - Me R.1107, “ team 9" (brothers Horten) - "flying wing" H XYSH. On March 12, 1945, the Hortens were given a contract to build a prototype of the H XUSH bomber.

AtegKa project

At the end of 1944, the German command, experiencing difficulties with the creation of a long-range jet bomber, turned to the idea of attacking the United States using long-range manned missiles and hypersonic missile bombers. Until the end of the war, within the framework of the Ategika project, the group of V. von Braun worked on the projects of manned rockets A 4, AbiA 9 / A 10, and E. Senger developed the concept of a rocket bomber, a prototype of future aerospace aircraft,

AIRCRAFT NORMAL SCHEME. R

Chapter 3

3.1. Projects of the company "Arado"

Ag 231

At the beginning of 1940, the company received a contract for the development of a single-seat reconnaissance float aircraft for submarines. The aircraft, which received the designation Ag 231, was equipped with a Hirt NM 501 engine with a power of 123 kW and had a simple collapsible design. Wing — with a break in the central part so that the left console was located slightly higher than the right one. This made it possible to fold the consoles back one above the other when disassembling the aircraft. In disassembled form with the floats removed, the car fit in a container with a diameter of 2 m. The whole process of dismantling the aircraft and its cleaning into the container took about 6 minutes, assembly and preparation for launching took the same time.

The first prototype Ag 23171 (“ÿ” meant “Yerÿÿÿÿ” - “experimental”) took off at the beginning of 1941. Tests revealed insufficient stability of the aircraft on water, as well as the impossibility of taking off at wind speeds of more than 20 knots. Despite the fact that the construction of all six ordered experimental machines was completed, further work was stopped, and KIM issued an order to the Focke Ahgelis company for the construction of the Ea 330 reconnaissance autogyro.

Characteristics of Ag 2311: wingspan - 10.16 m and its area - 14.7 m °, aircraft length - 7.8 m, height - 3.1 m, empty weight - 834 kg, take-off weight - 1051 kg — 170 km/h, cruising — 130 km/h, practical ceiling — 3000 m, flight range — 500 km, maximum duration — 4 h,

Ag 252

The development of a medium-range transport aircraft Ag 232 with two VM 801 engines began in 1941, in the early summer of the same year, the first prototype took off.

The aircraft was intended for operation from unprepared unpaved grounds. Its design provided for an additional undercarriage of 11 pairs of small wheels along the bottom of the fuselage, on which it could steer at low speed, overcoming ditches up to 1.5 m wide.

and 7 chassis consisted

| from a semi-retractable BOW strut and main struts retractable into the wing. A feature of the design of the main racks was the ability to draw in during loading and unloading operations. In this case, the aircraft was lowered onto the wheels of an additional landing gear, and the rear cargo hatch was at the level of the truck body. After the completion of the work, the main landing gear raised the aircraft so that during takeoff the additional landing gear did not touch the runway.

Later, due to the shortage of VMU/801 engines, starting from the fourth experimental aircraft (prototype of series B aircraft), four VMY 323 engines with a power of 923 kW each were installed.

The first two experimental vehicles took part in the supply of the Paulus group, surrounded near Stalingrad. At the end of the war, one of them (series A) and four Ag 232V-0s operated in the interests of the Luftwaffe high command on the Eastern Front, flying from bases in Finland and Norway into the depths of the Soviet troops. One of the Ag 2328V-0 was involved in the Zeppelin operation.

Transport aircraft At 232

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NORMAL PLANE E

The purpose of the operation "Zeppelin" was to organize an assassination attempt on the head of the Soviet state I.V. Stalin. Otto Kraus was appointed head of a special reconnaissance and sabotage team "Zeppelin", the headquarters of the team was located in Pskov. The role of the main executor of the operation was selected by the Soviet prisoner of war Pyotr Shilo, who during training was personally instructed by General Vlasov and O. Skorzeny. To carry out the act of sabotage, Shilo was supplied with a set of special weapons, among which was, in particular, the Panzerknake mini-grenade launcher. The Panzerknake, attached to the arm and hidden under the sleeve of the outer clothing, fired miniature armor-piercing incendiary projectiles capable of penetrating armor 45 mm thick.

At two o'clock in the morning on September 5, 1944, Ag 232V-0, flying towards Moscow, spotted air defense systems of the Moscow region in the Kubinka region. The plane, having come under fire from anti-aircraft guns and received damage, went back and made an emergency landing near the village of Yakovlevo, Smolensk region. The crew of the plane unloaded a motorcycle with a sidecar and sent Shilo and his partner, who took with them weapons, 428,000 rubles, a large number of forms of documents and seals, towards Moscow to complete the task. After that, leaving the badly damaged aircraft, the crew left in two groups through the forests towards the front. At six o'clock in the morning, Shilo and his partner were detained by the NKVD in the village of Karmanovo, Smolensk region.

At the end of the war, one of the surviving Ag 232 was captured by British troops and soon transferred to England, where he was tested.

Characteristics of the Ag 2328 “Taizepa Raz eg” (“Centipede”): wingspan – 33.5 m and its area – 138 m*, aircraft length – 23.6 m, height – 5.7 m, empty weight – 12 790 kg, take-off weight - 20,000 kg, maximum speed at an altitude of 4000 m - 305 km/h, range - 1300 km, climb time to an altitude of 6000 m - 25.5 min, service ceiling - 6900 m,

Ag 232 - side view

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NORMAL PLANTS armament - one 13 mm MC 131 machine gun in the nose, one 20 mm caliber MC 151 cannon in the upper turret and two MC 131 machine guns in the rear turret.

Ag 234

The project of a single-seat long-range twin-engine reconnaissance aircraft Ag 234A was completed at the end of 1941 (the original designation of the project was Ag E.370). The terms of reference of the KIM did not provide for a group start of these self

E t 5 years, therefore, for the convenience of placing fuel and reducing the weight of the machine, the company's designers abandoned the use of a normal chassis. Instead, a retractable ski was installed under the fuselage, and small supports were provided to ensure stability when landing under the engine nacelles. For takeoff, the aircraft was mounted on a drop-down launch cart, landing was carried out on a ventral ski.

The prototypes of this series were the first eight prototypes (Ag 234U1 - Ag 234U8). The aircraft was first taken into the air by test pilot Capt. Zelle on June 15, 1943; later the aircraft was lost. The second copy of the Ag 234-2 took off on July 27, 1943, but crashed during further tests. The third machine Ag 234\3 was used for take-off practice with additional launch boosters NUK 501, the pressurized cabin was equipped with an ejection seat, during tests the aircraft was seriously damaged. The fourth and fifth aircraft were in reserve. On the first four copies, turbojet engines were installed] ito 004A with a thrust of 840 kgf, the fifth machine

Taking off an AK 234 from the launch cart

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Ag 234 YI

had Lito 004V-0 engines with the same thrust, but 100 kg lighter.

On the sixth and eighth machines, 4 turbojet engines VMA 003A with a thrust of 800 kgf were installed, which were tested for use on machines of the C series. On the sixth machine, the engines were located in separate nacelles, on the eighth - in twin nacelles.

Ag 234 06

NORMAL FLIGHT AIRCRAFT 29

April 8, 1944, in the future, she underwent military trials at the front. The seventh aircraft, which took off for the first time on July 10, 1944, was lost during testing. The main technical characteristics of the Ag 234A are as follows: crew - one person, take-off weight - 7750 kg, service ceiling - 11700 m, maximum speed at an altitude of 6000 m - 765 km/h, range - 1940 km. Dimensions: length of the aircraft - 12.64 m, height - 4.3 m, wingspan - 14.41 m. Small arms were not installed, in the rear part of the fuselage there were compartments for photo equipment and a braking parachute. In connection with the decision to build machines of the B series, further work on the A series was stopped.

Series B (prototype Ag 234\9) — the design of the aircraft of this series began in December 1942. even before the start of flight tests of the A-series aircraft. A change was made to the terms of reference: the aircraft had to be multi-purpose and take off from any airfield, including in a group.

Therefore, instead of the start cart and ski, the designers provided for a normal three-wheeled chassis, which, when

Ag 234 UZ at the start

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Ag 234 UZ

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NORMAL PLANTS

changed in all subsequent series, two Lito 0048V-2 engines were used as a power plant:

Ag 234V-1 — single-seat reconnaissance aircraft with photographic equipment, small arms were not installed, take-off weight — 9200 kg, maximum speed — 780 km/h, speed — | range — 1950 km, service ceiling — 11,500 m.

A fighter version of this machine without photo equipment was also developed, and two fixed MC 151 cannons were installed under the fuselage in special fairings.

Ag 2348-2 is the first single-seat serial jet bomber. Armament - two fixed cannons MS 151, firing parallel to the axis of the fuselage to the rear, with an ammunition supply of 250 rounds per barrel. The bomb load could be taken in three variants: one 1000 kg bomb under the fuselage, two 500 kg bombs under the engine nacelles, one 500 kg bomb under the fuselage, and two 250 kg bombs under the engine nacelles.

It became the first mass-produced aircraft with a fixed weapon for firing backwards. This was due to the appearance in the last years of the war of high-speed, but low-maneuverable jet fighters, in connection with which the line of pursuit in air combat approached the direct and most probable for a fighter was a bomber attack from the tail.

Aiming during firing was carried out through the RU-1V periscope sight installed in the upper part of the pilot's cabin. The eyepiece of the sight was in front of the pilot's eyes, and the upper part with two lenses (front and rear) protruded beyond the dimensions of the lantern. To prevent about

At 234 V

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Ag 234 V (a periscope sight is clearly visible above the cockpit)

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i NORMAL SCHEME AIRCRAFT

Ag 234 V-2

icing, there were heaters under the protective glasses of the lenses. The front lens of the sight was used for dive bombing, switching the direction of aiming (forward or backward) was carried out by appropriate rearrangement of the optical prism of the sight.

For aiming during bombing from level flight, an automated synchronous bombing sight Ioize-7K was used, into which data on the flight altitude and speed of the aircraft were entered. In addition, before the flight, data on the speed and direction of the wind, as well as the ballistic coefficient of the bomb, were manually entered into the sight.

The sight was connected to the autopilot. When approaching the target, the pilot turned on the autopilot and deployed the sight, directing the vertical axis of the reticle towards the target. The turn of the sight was transmitted to the autopilot, and the aircraft lay down on a combat course. After that, the pilot turned the tracking prism of the sight, throwing

Layout diagram Ag 234 V-2

reduced the run

AIRCRAFT NORMAL SCHEME sighting beam forward and directing the crosshairs of the reticle on the target, and included a synchronous mechanism. The synchronous mechanism turned the sighting beam (sight prism) back with an angular velocity equal to the angular velocity of the aircraft relative to the target, thanks to which the reticle crosshairs continued to cover the target until the bombs were released. The sight was also connected to the ASK-234 electric dropper, so the bombs (volley or single) were dropped automatically when the sighting beam of the sight made the required aiming angle with the vertical.

The aircraft cabin was heated by air taken from the power plants. ® AE To enter the cockpit on the left side of the fuselage there was a retractable ladder, steps and handles. The cover of the entrance hatch to the cabin in emergency cases, REYA s could be dumped by cold air: using a special mechanism. The main advantage of the cockpit layout is a good view of the pilot forward, to the sides and down, since most of the cockpit was sheathed with plexiglass.

To facilitate the take-off of a heavily loaded machine under the wing, from the outer sides of the engines, launch boosters with a thrust of 500 kgf each could be suspended, which is almost twice

The fuel was placed in two soft tanks: a front one with a capacity of 1800 l or a rear one with a capacity of 2000 l. - For each engine Testing couplers made of Ag 234 and Ei 103 provided the possibility of supplying fuel from any tank using cross-feed valves.

If necessary, two hanging tanks of 300 liters each could be installed, which were hung under the engines. In flight, fuel from the left external tank was pumped into the rear main tank, and from the right external tank, into the front main tank.

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NORMAL PLANTS

In total, by the end of the war, 210 aircraft of the [4 V] series were built, they were equipped with reconnaissance "Sonderkommandos" No. "Hecht" and "Sperling" (Ag 234V-1) and the bomber squadron KS 76 (Ag 234V- 2).

It was supposed to use the Ag 234V as a towing vehicle for the E 103 cruise missile, which was equipped with a drop two-wheel landing gear and a tug mount, such tests were carried out in Rechlin.

Series C (prototype Ag 234\19) - bomber, could simultaneously carry up to 1500 kg of bombs, to achieve higher speeds, instead of two Lito 004V-2 turbojet engines, four turbojet engines were installed

VMU 003A, doubled under each wing console. Overall dimensions of machines of this series
analo

47234 B-series gages.

Ag 234S-1 - single-seat reconnaissance aircraft, armament - four fixed guns MS 151 (two in the forward fuselage for firing forward and two in the rear fuselage, directed backwards), take-off weight - 9900 kg, maximum speed height - 870 km / h, range - 1475 km, service ceiling - 11,530 m;

Ag 234S-2 is a single-seat bomber, similar to the previous version, take-off weight is 10,100 kg, maximum speed is 895 km/ h, range is 1,600 km, service ceiling is 11,530 m.

Ag 234S-3 is a single-seat bomber and a night fighter with four MC 151 cannons (in the fighter version, two cannons were located in the forward fuselage, and two were in fairings under the fuselage, barrels forward), take-off weight - 11,555 kg, maximum - naya speed - 892 km / h, range - 1230 km, practical

Test layout Ei 103

Ag 234 C (front view)

At 234 S-3

The static ceiling was 11,530 m, and the RiS 218 “Mershp” radar was to be installed in the forward part of the fuselage.

Ag 234S-4 is a single-seat reconnaissance aircraft with VMÿ 003S engines, armament - four MS 151 cannons (two in the nose of the fuselage, two in fairings under the fuselage for firing backwards - barrels to the tail), take-off weight - 9100 kg, maximum speed - 880 km / h, practical ceiling - 11,530 m.

Ag 234S-5 is a two-seat bomber with VMU 003S engines.

Ag 234S-6 is a single-seat reconnaissance aircraft based on the previous version.

Ag234S-7 is a two-seat night fighter equipped with four Hes 011A engines with a thrust of 1350 kgf each and an EU 245 Vgetep radar in the forward fuselage, armament - two MK 108 cannons of 30 mm caliber and two MS 151 cannons, take-off weight - 11555 kg.

Ag 234S-8 is a single-seat bomber powered by two Lito 0041 engines with a thrust of 1050 kgf each, takeoff weight 9800 kt, maximum speed 755 km/h.

In total, by the end of the war, 10 experimental machines and 14 serial ones were built from this series.

The At 234C was also tested as a towing vehicle for the H$ 294 missile; in addition, the technique for launching the Ei 103 cruise missile from the back of the Ag 234C was worked out, for which
used

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Ag 234 ÿ-3 + ÿÿ 103

a special rocking chair that lifted the ÿÿ 103 at the time of launch above the carrier aircraft.

Series B - single cars with two engines Not 011A, overall dimensions of cars are similar to series B:

Ag 2340-1 - reconnaissance aircraft, two vehicles were built before the end of the war;

Ag 2340-2 is a bomber project."

The E series is a project of a single-seat machine, structurally close to the machines of the previous series.

The E series is a project of an oversized machine with four Nes 011A engines or two Yoto 012 engines.

The P series is a night fighter project, compared to the B series, the length of the aircraft has been increased to 13.26 m:

Ag 234R-1 is a two-seat vehicle with four VMU / 003A engines, armament - two guns (one MK 108 and one

Ag 234 S-3 (with rotating antenna)

NORMAL FLIGHT AIRCRAFT MS 151), takeoff weight - 11700 kg, maximum speed - 850 km / h, range - 1125 km;

Ag 234R-2 - modification of the previous version;

Ag 234R-3 - a two-seat vehicle with two Ne5 011A engines, armament - four guns (two MK 108 and two MS 151), takeoff weight - 10650 kg, maximum speed - 820 km / h, range - 1690 km;

Ag 234R-4 - a two-seat vehicle with two ato 0040 engines, armament - five guns (two MK 108 and one MS 151 for firing forward and two MK 108 for firing at an angle up and back), takeoff weight - 10520 kg, maximum speed - 710 km / h, range - 1725 km;

Ag 234R-5 - a three-seat machine with two He 011A engines, takeoff weight - 10400 kg, maximum speed -

Ag 234 R-5

890 km/h, range - 1000 km, armament - five cannons (four MK 108 and one MS 151), the installation of the RiS 245 "Vgetep" radar was supposed in the forward fuselage. One of the variants of the machine (team fighter) was supposed to have a rotating antenna in a disk fairing on the back of the fuselage (actually a prototype of AHAS aircraft). The company's designers have developed a new sickle-shaped wing of variable sweep (from 37 ° at the wing root to 25 ° at its tips). To test this wing is intended

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NORMAL PLANTS

Ag 234 U 16

The Ag 234U16 was launched with two VMU/003K engines (combination of a conventional VMU/003A turbojet engine with a VMY 718 rocket engine capable of developing thrust up to 1225 kgf within three minutes). The wing was already ready to be installed on the aircraft, but in April 1945 the British troops occupied the plant and the Germans destroyed the wing before retreating.

The wing configuration was recreated after the war at Hedley Page (England) and tested in 1951 on an XP 88 aircraft, and then used in the Victor bomber.

On February 24, 1945, an Ag 234V-2 made an emergency landing near a village near Segelsdorf due to the stoppage of one engine. The next day, the village was captured by American troops, and the plane was the first to fall into the hands of the Allies.

After the end of the war, two captured vehicles (Ag 234V and Ag 234C) were taken to the Soviet Union for study.

Characteristics of the Ag 234V "VSh2" ("Lightning"): wingspan - 14.41 m and its area - 26.4 m?, aircraft length - 12.64 m, height - 4.3 m, empty weight - 5228 kg, flight weight normal

NORMAL SCHEME AIRCRAFT - 8850 kg, reloading - 9500 kg, fuel weight - 2650-3000 kg, bomb load - 500-1500 kg, maximum speed with a flight weight of 6600 kg at an altitude of 6000 m - 742 km/h, landing speed - 146 km/h, time to climb 8000 m - 18 min, maximum range with external tanks with a capacity of 4360 l - 1890 km, practical ceiling - 9200 m.

Ag 240

Work on the creation of a project for the multi-purpose aircraft Ag 240 began in 1938. It was a two-seat machine with a pressurized cabin and a remotely controlled machine gun mount. The wing had automatic slats, air brakes were located in the tail section of the fuselage, folding into a cone. The first experimental Ag 240U1, the tests of which began in the fall of 1940, was equipped with two OV 601A engines with a power of 845 kW each. Tests revealed the instability of the machine along all three axes, after which changes were made to the design of the third machine. The changes were as follows: the fuselage was lengthened by 1.2 m, the pressurized cabin was moved forward, the air brakes and slats were removed, an additional keel was installed, coaxial 7.9-mm machine guns were placed in the upper and lower turrets, in the bow — two guns MS 151.

The aircraft entered military trials in the long-range reconnaissance group. Colonel Knemeyer performed several reconnaissance flights over England on it,

Ag 234 UZ

NORMAL PLANTS

On the Ag 240U4, air brakes were again installed, knots

suspensions for eight 50-kg bombs; OB 603A with a power of 1286 kW were used as engines.

In December 1942, by order of E. Milch, the program was suspended.

Aircraft of the A series (Ag 240A-0) with VMU/801] engines with a power of 1058 kW each were used as fighters. Later, in the battles against the USSR and England, they were used as scouts, for this, two cameras were installed in the engine nacelles.

Characteristics: crew - two people, wingspan - 14.2 mio area - 24.0 m? aircraft length - 12.65 m, height - 3.95 m, maximum speed at an altitude of 3000 m - 528 km/h, armament - four MC 151 cannons (two in the forward fuselage, two in the wing roots)

and one electrically controlled rifle installation EPI, 817 with coaxial machine guns MS 81 caliber 7.9 mm and a periscope sight.

Ag 240V (prototypes - Ag 240U3 and Ag 24074) - a two-seat fighter, equipped with two OB BOTA engines with a power of 845 kW each.

Characteristics: wingspan - 14.2 m and its area - 24.0 m2, aircraft length - 12.65 m, height - 3.95 m, take-off weight - 12600 kg, maximum speed at an altitude of 7000 m - 635 km / h , armament similar to series A.

Series C (prototypes - Ag 240% 5, Ag 240\6, Ag 240U7 and Ag 240\8):

C-1 - a two-seat fighter and reconnaissance aircraft, equipped with two OB 603A engines.

Characteristics: wing span - 15.0 m and its area - 26.0 m?, aircraft length - 12.65 m, height - 3.95 m, takeoff weight - 13100 kg, empty weight - 5500 kg, fuel supply - 2750 l, maximum speed at an altitude of 7000 m - 672 km / h (injection of a water-methanol mixture made it possible to increase speed to 730 km / h), range - 1900 km, practical ceiling - 10,500 m, armament - six MS 151 guns (two - in the forward part of the fuselage, at the wing root and under the fuselage) and two EPI. 1317, two cameras in engine nacelles. In addition, the aircraft could carry a bomb load: one 1000 kg bomb under the fuselage and two 500 kg bombs under the wing;

C-2 - night fighter;

C-3 and C-4 - high-speed bomber and reconnaissance;

In addition, the following series were developed: G (multi-purpose with

engines OV 614), E (bomber with engines rp 6036), E (fighter).

In total, before the termination of the program, they managed to build

12 cars. Ag 240A-01 and Ag 240A-02 delivered to the 5th Exterminate

squadron (JC 5 "Eisteeg"), based in the north

Finland at Petsamo, where they conducted reconnaissance in the Mur-

`Manskaya railway. One of Ag 240 from February 1943

he acted as part of the Ostland air command, and from July of the same year - as part of the Don air command. Ag 240A-03, Ag 240A-04 and Ag 240A-05 were used on the southern sector of the Eastern Front as part of the first squadron of the reconnaissance group of the Luftwaffe High Command (Au. CrOb.4 ..).

Ag 340

A two-beam bomber, which participated in the KIM competition under the Botler-B program in 1939. Such a design scheme was convenient for shelling the rear hemisphere. It was equipped with two ÿito 222 engines installed in front of the beams. The main landing gear retracted into the engine nacelles, the tail wheels - into the rear of the beams. Rear-firing armament consisted of three MC 151 cannons, located one at a time in the rear parts of the fuselage and beams. Shooting from them was carried out remotely through a periscope sight. In addition, below and above the fuselage behind the pressurized cabin, designed for four people, there are

EPI remotely controlled turrets were deployed. 131, who had

one 13 mm machine gun. The bomb load of 2000 kg was located in the fuselage bomb bay.

Characteristics: wingspan - 22.98 m, length - 18.65 m, take-off weight - 24000 kg, maximum speed at an altitude of 6000 m - 540 km / h, range - 3600 km.

Ag E.381

Work on the project of the rocket fighter-interceptor Ag E.381 was completed by December 1944. It was assumed that it would take to the air, suspended under the fuselage of the Ag 234C bomber, and after uncoupling from the carrier aircraft, it should attack the formation of the allied bombers. The project was carried out in two versions - Ag E.381-1 and AgE 381-1.

The Ag E.381-[fighter was equipped with a NUK 509A-2 rocket engine. The fuel reserve was only enough to maintain high speed after the cutoff and after no more than 60 two attacks. The return to the base after completing the combat mission was carried out in a gliding mode with a landing on a retractable ventral ski; if necessary, a drag parachute could be used during the run.

The machine had a rectangular wing and tail, as control surfaces were used

AgE 381

 (ailerons, elevators and rudders. Fighter cockpit, |

in which the pilot was lying down, was a steel pipe inserted into the fuselage with a wall thickness of 5 mm. The glazed nose fairing had a 140 mm thick reinforced glass protective screen inside. Access to the cockpit was carried out through the upper armored hatch, so the pilot could not leave the cockpit before separation from the carrier aircraft.

The fuel tanks were located behind the cockpit: two fuel tanks (S-5100) were on the sides of the pilot's legs, one with an oxidizer (T-5:0#) was behind his feet. In the wing above the fuselage there was one MK 108 cannon with 45 rounds of ammo. To increase the survivability of the aircraft, metal skin and a power pack were used in its design. During high-altitude flights, the pilot had an autonomous oxygen device; warm air was supplied from the carrier aircraft to heat the fighter cabin. The modular design of the machine made it possible, if necessary, to quickly disassemble the aircraft (wing, fuselage, tail) and transport it in an aircraft or car to a new base.

Characteristics of Ag E.381-1: wingspan - 5.0 m and its area - 5.5 m °, aircraft length - 4.95 m, empty weight - 890 kg, take-off weight - 1220 kg, fuel weight - 52 kg, the weight of the oxidizer is 150 kg, the maximum speed at an altitude of 8000 m is 900 km/h.

The second version of Ag E.381-P had a wingspan of 5.0 m and a length increased to 5.7 m. The shape of the fuselage was slightly modified to install an access hatch on the side, which allowed the pilot to leave the aircraft before separation from the carrier in case of an emergency. as an engine

NU/K 509V LRE was used, armament - one MK 108 cannon and two KA 73 missiles on the wingtips.

Ag 432

Further development of the transport aircraft Ag 232, in the design of which steel pipes were widely used: instead of scarce aluminum ones. The assembly of the first prototype machine began at the factory in Eger, but was not completed until the end of the war.

NORMAL FLIGHT AIRCRAFT Ag 440

Work on the creation of a high-altitude two-seat fighter and fighter-bomber began in 1942. The Ag 440 was a modernization of the Ag 240 aircraft and was equipped with two OV 6036 engines with a power of 1398 kW each.

Ag 440 U1

The first experimental Ag 440A-01 took off in the summer of 1942. By the end of 1942 and January 1943, three more aircraft were built. Despite the good test results in Rechlin, KIM refused to launch it into a series,

Characteristics of the machine: wingspan - 16.3 m and its area - 34 m?, aircraft length - 14.2 m, height - 4.0 m, empty weight - 9200 kg, takeoff weight - 12,210 - growth - 696 km / h at an altitude of 8300 m and 747 km / h at an altitude of 11,200 m, range - 2700 km with two outboard 670-liter tanks

NORMAL PLANTS mi, armament - two MC 151 cannons in the forward fuselage, two MK 108 cannons in the root parts of the wing panels, two MC 131 machine guns in the upper and lower remotely controlled mounts and one fixed MC 131 machine gun for firing back.

Ag E.500 Project of a four-seat bomber with two beams

scheme. OV 603 engines were installed in the front parts of the beams, the main landing gear was retracted into the motorcycle race

AgE 500

valleys, and the tail wheels - in the rear of the beams. The cockpit was located in the forward part of the short fuselage, behind it was the gunner's workplace with two VV GV cannons of 20 mm caliber, below it was a turret, from which firing was carried out lying down through a periscope sight. Characteristics
the ki of the aircraft are unknown.

Ag E.555-10

The project of a long-range bomber of a two-beam scheme with three BM 018 turbojet engines located on top of the rear fuselage. The pilot and navigator were located in the front pressurized cabin, the gunner-radio operator was in the rear pressurized cabin. The armament consisted of two MK 108 cannons in the wing on the sides of the front cockpit for firing forward and a turret with two MC 151 cannons in the rear of the fuselage for firing backwards.

Characteristics: wingspan - 23.66 m and its area - 140 m2 aircraft length - 19.2 m, take-off weight - 47845 kg, bomb

Y Y

combat load - 4000 kg, maximum speed - 920 km / h, range - 6400 km.

Ag E.555-11

A project of a long-range conventional bomber with four VMÿ 018 turbojet engines located in pairs above the wing root. The crew of three was located in the pressurized cabin one after another. The armament consisted of two MK 108 cannons in the root part of the wing for firing forward and a remotely controlled turret with two MC 151 cannons in the rear fuselage for firing backwards.

Characteristics: wingspan - 22.66 m, aircraft length - 25.1 m, height - 4.1 m, takeoff weight - 47,000 kg, bomb load - 6000 kg, maximum speed - 1020 km/h, range - 8000 km,

Ag E.560

Project of a bomber with four Ne$ 011 turbojet engines, swept wing and two gun mounts equipped with MC 151 cannons (two in the front and one in the rear).

Aircraft characteristics: wingspan - 18.1 m, length - 1911 m, height - 5.0 m, bomb load - 2000 kg.

Ag E.561 Heavy twin-engine fighter project developed

was built in 1937-1938 Crew - four people, armament - two twin machine-gun mounts MS 812.

Ag E.580

The light fighter project was developed at the beginning of 1943, in September 1944 it was redesigned to participate in the KIM competition for the development of the U01Kÿÿavet. It was supposed to use VMA 003A as an engine, armament with two MK 108 or MS 151 cannons in the nose, the layout was similar to the He 162 aircraft that won the competition. - 10.03 m?, length of the aircraft - 7.86 m, height - ÿÿÿ 580

2.5 m, takeoff weight - 2492 kg, fuel weight - 498 kg maximum. base speed at an altitude of 5900 m - 744 km/h, landing speed - 153 km/h, rate of climb near the ground - 1020 m/min, rate of climb at an altitude of 9840 m - 235 m/min, radius of action - 508 km, takeoff distance - 560 m, maximum flight time - 54 min.

AGP

Project of a conventionally designed fighter with a swept wing and two He 011 engines, armed with four MK 108 cannons in the forward fuselage.

ARI

Characteristics: wingspan - 15.0 m, length - 17.3 m, takeoff weight - 13,200 kg, maximum speed - 750 km / h,

Ag TEÿ 16/43-13

The project of a single-seat missile fighter-interceptor with LRE NUK 509A was launched in August 1943. The engine was located in the rear fuselage, in the middle part behind the cockpit there were two tanks for fuel components (T-5:0ÿ and S-5:0#). Chassis - tricycle. Armament is installed in the bow under the cockpit - two MK 108 guns and two MS 151 guns.

46

NORMAL SCHEME AIRCRAFT The first experimental aircraft was undergoing flight tests, but soon the work on the project was stopped, since mass production of the Me 162 missile interceptor had already begun.

97 m

Ag TECH 16/43-19

The project of a two-seat multi-purpose aircraft, similar in layout to the Ag 234, was started in August 1943. It was assumed that the power plant would consist of two engines He 011 or VMY 018. The forward part of the fuselage is similar to the forward part of the Ag aircraft 240, the crew members were located in the cockpit one after another, the gunner-radio operator sat facing the tail. Five versions of the machine were developed: a high-speed bomber, an attack aircraft, a night fighter with a radar in the forward fuselage (a crew of three, the radar operator was located in a separate cabin in the rear of the fuselage), an all-weather fighter and a reconnaissance aircraft.

Weapon options:

- high-speed bomber - in the tail section there are two MK 213 cannons firing backwards, a bomb load of up to 2500 kg under the fuselage and engine nacelles;

— attack aircraft — in the bow part two built-in cannons MK 213 and three cannons MK 108 in a hanging container, firing forward, or in the bow part two cannons MK 213, in the tail part two cannons MK 213, firing backwards, and a bomb load of 1000 kg on external bomb racks;

— night fighter — two MK 108 cannons in the nose and three MK 213 cannons in a hanging container, firing forward, or in the nose, two MK 215 cannons, two MK 108 cannons, firing upwards at an angle of 70 50 0, and in the tail section there are two MK 213 cannons firing backwards;

— all-weather fighter — two MK 108 cannons in the bow and three forward-firing MK 213 cannons in a hanging container;

— reconnaissance — two MK 213 cannons in the tail section, firing backwards.

In connection with the decision to start mass production of Ag 234 and Me 262, work on the Ag TECH project

16/43-19 stopped.

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NORMAL PLANTS

Characteristics: wingspan - 16.2 m and its area - 46.6 m? aircraft length - 18.0 m, height - 3.0 m, takeoff weight - 16,000 ke

Ag TE 16/43-23

The project of a single-seat fighter with two NeS 011 turbojet engines was developed simultaneously with the Ag TEM 16 / 43-13 and Ag TEM 16 / 43-19. The front landing gear had a wheel with a spherical tire. One MC 151 gun and two MC 212 guns were installed in the bow under the cockpit.

ÿÿ ÿÿÿ 16 / 43-23 Characteristics: wingspan - 10.6 m, aircraft length -

12.2 m, height - 2.69 m, takeoff weight - 7000 kg, maximum speed - 920 km / h, service ceiling - 12,000 m.

3.2. Bachem project

Va 349 In the summer of 1944, a decision was made to start production of the 9. Bachem target mini-missile interceptor under the designation Va 349 “Matseg” (“Viper”). Created in July this year

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NORMAL PLANTS

Ba 349A

or the company "Bachem werke GmbH", which was taken over by the technical director of the company "Dornier" H. Bethbeder, and in August work began on Ba 349 under the personal supervision of Colonel Kneemeyer from the Technical Department of KIM.

The interceptor was supposed to take off from a ground launcher, attack the enemy with unguided missiles, and, after using all the missiles, make a ram. Immediately before the collision, the interceptor pilot had to eject, at the same time, with the help of explosive bolts, the tail section of the fuselage was disconnected from the rocket engine and landed on a parachute. The surviving propulsion system was to be reused.

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NORMAL PLANTS

The design of the Ba 349 was mainly made of wood, the straight wing had no mechanization, and the aircraft was controlled using control surfaces located on the cruciform tail unit. The forward part of the fuselage housed the pilot's cockpit, and under the drop-off plastic nose fairing, there was a honeycomb battery of unguided rockets (24 H$ 217 rockets of 73 mm caliber or 34 VAM rockets of 55 mm caliber). To protect the pilot in flight, it was envisaged to armor the cockpit - installing a front armored plate behind the missile battery, and a rear armored partition behind the seat,

The cockpit contained: control panel, pilot's seat, rudder pedals, fire control pedal, aircraft control stick, Patin autopilot, oxygen equipment and radio control equipment. Aiming during the attack was carried out with the help of a frame located in front of the cockpit between the fairing and the windshield. The windshield had a thickness of 60 mm, the hinged part of the lantern opened up and back, and was dropped when the pilot left the aircraft.

In the middle part of the fuselage there was a wing and two fuel tanks - the lower one for the S-510#% for 190 l and the upper one for the T-5:10 for 440 l. -1, attachment points for four Schmidding 533 boosters and a container with a parachute.

The takeoff of the aircraft from the launcher was carried out with the simultaneous operation of the launch boosters and the LRE, set to the idle mode. The LRE thrust limitation was made to limit the starting overload to $2.5. It was believed that even with this overload, the pilot could not

cope with the control, so the rudders were blocked before launch in a predetermined position, which ensures the safe departure of the aircraft from the guides of the launcher. At an altitude of 170-200 m, the boosters were dropped, the rocket engine was brought to full thrust, and the autopilot was switched on, controlled by radio from the ground. After

Missile interceptor Ba 349 on a cradle

 G-force reduction at an altitude of about 1200 m, the pilot had to switch to manual control. After completing the combat mission, the pilot had to leave the aircraft.

During the development of the aircraft, it turned out that the cockpit was too small to accommodate the ejection seat, and the design of the seat itself had not yet been worked out. For this reason, the concept of leaving Pÿ TA Ra by the pilot of the aircraft was changed: AH PR L now he had to unfasten the Preparing for takeoff seat belts Ba 949, disconnect the aircraft control stick, tilt the canopy and reset the nose | part of the fuselage. The bow was separated | together with windshield, front bulkhead and control panel. Ras- | the drogue parachute in the tail part, as it were, shook the pilot out of the chair forward, after which the pi

Starting rotechnic bolts connecting

position Ba 349 tail section with the middle part of the fuse

lying down. After the separation of the pilot and tail

part, together with the propulsion system, each landed on its own parachute.

The first prototype Ba 349 was intended for towing flight tests and had a tricycle wheel chassis. It was first flown without a pilot in November 1944 in tow behind a He 111 aircraft.

The first unmanned vertical launch using boosters from a ground-based launcher was scheduled for December 18, 1944 (an LRE was not installed). The tests ended in failure - the plane did not leave the guides of the launcher due to the fact that the launch boosters

The start of the interceptor burned out in the places of the ignition wiring - Ba 349

niya. The first successful unmanned launch took place on December 22, after which another 10 unmanned vehicles successfully launched. According to the test results, a number of changes were made to the design of the Ba 34916, which became the prototype of the A series machines. Along with this, the ministry decided to stop parallel work on the Heinkel project He P.1077 Sha, which were at the stage of building a prototype.

On February 25, 1945, the first full launch of the Ba 349A took place with a rocket engine and a dummy in the cockpit. The flight was successful, after which KIM demanded to speed up the tests and switch to manned flights. On February 28, test pilot Lieutenant Lothar Siebert took off for the first time on the Ba 249A. The aircraft took off successfully, but during the climb, the cockpit canopy spontaneously opened, concussing the pilot. The car, gaining a height of about 1500 m, dived and exploded when it hit the ground, the pilot died.

Despite the catastrophe that occurred during the first manned flight, the tests continued, having completed 24 launches until April 1945, including 7 manned ones. After testing on the aircraft, the tail section of the fuselage was redesigned for a new two-chamber NU/K 509S liquid-propellant rocket engine, the hardpoints of the launch boosters were moved closer to the tail, and the height of the fuselage was slightly increased to accommodate two MK 108 guns. The new modification of the aircraft received the designation Ba 349V , and KIM limited the production of Ba 349A to 50 experimental machines, immediately launching the Ba 349V into mass production (the first batch of machines was to have the designation Ba 349V-1).

A total of 36 aircraft were built before the end of the war, among them three experimental Ba 349Vs, one of which flew. None of the built Ba 349 aircraft had time to take part in the hostilities, although 10 aircraft were placed at Kirheim at starting positions to repel allied air raids. Almost all of them, together with launchers, were destroyed by special SS teams during the retreat, however, four vehicles were captured by the allied forces: American

Climbing by interceptor Ba 349

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AIRCRAFT OF THE NORMAL SCHEME Sky - three and Soviet - one. At the very end of the war, the technical documentation for the Ba 349 was acquired by the Japanese, but not a single car was ever built. Currently, one copy of Ba 349 is in museums in the USA and Germany.

Characteristics of the aircraft Ba 349

Option Ba 349A Ba 349B Wingspan, m 4.0 4.0 Wing area, m? 47 47 Aircraft length, m 60 6.0 Height, m 75) 2.25

Empty weight, kg 800 880 Takeoff weight, kg 2000 2234 Maximum speed, km/h 900 990 Rate of climb, m/s 183 190 LRE operating time, min 2.23 4.36

3.3. Blom & Foss projects

VU 40

At the beginning of 1943, Blom and Foss developed a project for a fighter glider designed to fight Allied bombers. It was assumed that a glider diving from a great height and armed with 30-mm cannons would be able to quietly approach the enemy and attack him.

The glider had a wooden structure, except for a cockpit welded from steel sheets, in which the pilot was lying down. The takeoff was carried out with the help of a towing aircraft on a two-wheeled trolley, and a ventral ski was used for landing. The first flight of the VU 40U1 took place at the end of May 1944 with the tug BE 110.

At the beginning of the summer of 1944, KIM changed the technical requirements for the VU 40, which required further design. It was supposed to convert the glider into a mini-plane with a rocket or pulse engine, as well as install under

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Vu40U1

wing hardpoints for four 70-kg bombs. 19 experimental test vehicles were ordered, and an order was being prepared for an installation series of 200 aircraft. However, already in the autumn of the same year, the program was closed, having built 9 cars.

Characteristics: wingspan - 7.9 m and its area - 8.4 m? glider length - 5.7 m, height - 1.6 m, empty weight - 840 kg, takeoff - 950 kg, maximum dive speed - 900 km/h, armament - two guns MK 108.

VU 155

The project of a single-seat carrier-based fighter under the designation Me 155 was developed at the Messerschmitt firm by the end of September 1942. fighter.

Due to the workload of the company, the Me 155V project was transferred to Blom and Foss, where they decided to redesign the aircraft. The machine, which received the designation VU 155, made its first flight on September 1, 1944, which ended with the aircraft breaking down. The second and third aircraft became prototypes of the B series, aircraft of this series were to be equipped with a PB 603A engine. In parallel with the assembly of the VU 155 \ 3, the design of the VU 155C was being developed. according to plan

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NORMAL PLANTS

VU 155 U II and its original version

the fourth machine (VU 155S-01) was supposed to be built in April 1945, but it had not been assembled by the time the Allies captured the factory in Finkenwerder. The third experimental aircraft was taken to England after the war, and then sent for detailed study to the USA.

Characteristics of the VU 155V: wingspan - 20.3 m and its area - 37.7 m', aircraft length - 12.5 m, height - 2.97 m, empty weight - 4870 kg, takeoff - 5500 kt, maximum speed at an altitude of 15,000 m - 690 km/h, range - 585 km, rate of climb near the ground - 11.5 m/s, service ceiling - 17,000 m, armament - one MK 103 gun of 30 mm caliber and two MS 151 guns .

VU R.163

Continued research on the development of an aircraft design with improved all-round visibility. The aircraft was equipped with one engine OV 6136 with a power of 2208 kW or VMY 803 with a power of 2944 kW, located in the forward fuselage. Gondolas were located at the ends of the trapezoidal wing: the cockpit was located on the left, and two rifle installations with MS 151 guns were on the right.

Characteristics: wingspan - 20.72 m, aircraft length - 15.5 m, height - 4.56 m, range - 2000 km, maximum speed - 570 km/h.

Fighter-bomber with three VMUU 801 engines installed in the forward fuselage and at the ends of the straight wing. The vertical tail was located at the ends of the engine nacelles, each nacelle had a fuel tank that fed its own engine. Two crew members were accommodated in a cockpit located in the rear fuselage. Chassis
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VUR 170

four-pillar, the main supports were retracted into the nacelles (two) and into the fuselage (one), the tail strut was retracted into the fuselage. Armament consisted of six MC 151 guns or six MK 108 guns in the wing. A bomb load was suspended under the wing: in normal versions - four 5C 250 bombs (two under each console), two $C 500 bombs (one under each console) or one 5C 1000 bomb (under the right console), in the - loading options - four bombs 8C 500 or 2 bombs $ C 1000.

Characteristics: wingspan - 17.0 m and its area - 44 m?, length of the aircraft - 13.4 m, height - 3.65 m, takeoff weight - 13,300 kg, fuel weight - 2800 kg, maximum speed at an altitude of 8000 m - 820 km / h, takeoff speed -

 181 km/h and landing — 156 km/h, rate of climb near the ground — 17.8 m/s, service ceiling — 11,650 m, range — 2,000 km.

VU R.184.01

The project of a long-range four-engine bomber, the so-called "A tegika-Votreg". Its peculiarity was a five-post chassis, the main supports were located under the engine nacelles of the VMY 801E engines. The design of the bomber was almost entirely made of steel, the wing skin had a thickness of 2 mm. Fuel tanks were located in the fuselage and wing. The crew of five was in a pressurized cabin in the forward fuselage. Armament - one MK 103 cannon in the bow, a remotely controlled tail turret with two MC 131 machine guns and 4,000 kg of bombs.

Characteristics: wingspan 35.8 m and its area 82 m, aircraft length - 17.3 m, height - 6.6 m, takeoff weight - 43,225 kt, range - 7500 km, maximum speed - 450 km / h, soon lifting near the ground - 360 m / min, practical ceiling - 8840 m.

VUR.187

Variant of the flying boat VU 222 "Cyprus". It was supposed to install six VM \/ 801 engines, the armament consisted of four MC 151 guns.

VU R.188

The project of a four-engine bomber with a wing that resembled the letter "" in plan. The wing had a small transverse Y, the inner sections of the wing had a normal sweep of 20°, and the outer sections had a reverse sweep of 20°.

Variants R.188-01 and R188-3 had a single-keel plumage, while R.188-2 and R.188-4 had spaced fins. The Lito 004S turbojet engine was supposed to be used as engines: for R.188-03 and R188-04 — in twin engine nacelles under the wing, for R188-01 and R188-02 — in separate ones. Chassis four-post - two main racks are installed in tandem under

fuselage, two additional - under the wing. The tail unit had an air brake. The crew of two people was housed in a pressurized cabin.

Armament — EPI, 1317 upper and lower remote-controlled turrets with two 13 mm machine guns in each for firing backwards.

Characteristics: wingspan - 27.0 m, aircraft length - 17.55 m, bomb load - 2000 kg, take-off weight - 24,300 kt, maximum speed at an altitude of 8000 m - 873 km/h, range - 2285 km.

VUR. 192.01

Attack aircraft and dive bomber project. The OB 6036 engine, installed in the middle of the fuselage, through an elongated shaft, rotated the propeller located behind the cockpit (between the front horizontal tail unit and the wing). The wing is straight in plan view. The armament consisted of four MC 151 cannons, two each in the forward fuselage and in the beams connecting the front horizontal tail and wing, and 500 kg of bombs.

Characteristics: wingspan - 16.5 m, length - 14.5 m, maximum speed - 670 km / h.

VU R.193.01

Project of a single-seat fighter-bomber with a straight wing and a ÿito 213A engine that rotated a pusher propeller in the rear fuselage. The keel was located at the bottom and protected the propeller from hitting the ground during takeoff and landing.

Characteristics: wingspan - 114 m, length - 10.3 m, takeoff weight - 5724 kg, maximum speed - 520 km / h,

armament - two MK 103 cannons in the wing and two Mb 151 cannons in the forward fuselage, one 5C 1000 bomb or two bombs

$ from 500.

A project of a jet attack aircraft and a dive bomber with a twin-boom tail. Two twin VMU 003A engines were located under the fuselage. A bomb bay was located in each tail boom in front. The chassis consisted of two main struts and crutches at the rear of the beams. Armament - two MK 103 guns, two MS 151 guns and two 5C 250 bombs or two 5R 250 bombs.

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VUR 196

Characteristics: wingspan - 15.0 m, length - 117 m, height - 3.3 m, range - 800 km, maximum speed - 900 km/h.

VU R.197

The project of a jet fighter with two VMY 003 engines located in the tail

LBE 1332 ULa Turbojet engine VM\ÿOOZ

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NORMAL PLANTS

VUR 197

howling part of the fuselage. Armament - two guns MK 103 and two guns MS 151.

Characteristics: wingspan - 11.1 m, aircraft length - 9.0 m, height - 3.64 m, maximum speed - 1000 km / h.

62

NORMAL PLANTS VU R.198

A project of a single-seat high-altitude fighter-interceptor with a VMY 018 turbojet engine in the lower part of the fuselage. A radar was located in the nose of the fuselage, the main landing gear was retracted into the root of the wing. Armament - one gun

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NORMAL PLANTS

MK 103 and two guns MS 151, the possibility of using

instead of MK 103 guns MK 112 or MK 114 caliber 55 m. Characteristics: wingspan - 15.0 m, aircraft length -

12.8 m, time to climb 15,000 m - 11 minutes.

VU R.200

The project of a giant flying boat with eight engines with a capacity of 2940 kW to transport 200 people. Crew - 15 people,

Characteristics: wingspan - 85.0 m and its area - 715 m2, aircraft length - 70.4 m, take-off weight - 200,000 kg

VU R.202

In 1944, they developed a project for a single-seat fighter with a rotary wing and two BM 003 engines in the lower part of the fuselage. The takeoff was carried out at a zero angle of rotation, after which the wing turned so that one console turned forward and the other back. The maximum angle of rotation of the wing in cruise mode was 35°. The niches of the main landing gear were located in the wing, the cleaning and release of the racks were carried out at a zero angle of rotation of the wing. Armament - two MK 103 guns and one MS 151 gun.

VUR 202

Characteristics: wingspan - 11.98 m in normal

position and 10.06 m when turning by 35%, the length of the aircraft is 10.45 m.

VU R.203

The project of a two-seat bomber with two VMY 8010 engines with a power of 1225 kW each and Neb 011A turbojet engines installed under them. The maximum speed is 900 km/h.

VUR.207

A project of a single-seat fighter with an engine in the rear fuselage that rotated a pusher propeller through a long shaft. The project was carried out in several versions.

2207.02 was equipped with an Az 413 or Lito 213 engine, had a straight wing with a span of 12 m and a cruciform tail, with the upper keel being slightly shorter than the lower one. The engine cooling radiator was located under the cab. The armament consisted of two guns MK 103 and MS 151, located in the forward part of the fuselage.

R207.03 was equipped with an OV 603S engine, the wing had a small sweep and transverse U, one keel of an increased area was located below.

Characteristics: wingspan - 9.9 m, aircraft length - 9.73 m, armament - four guns MK 108,

VU R.209.02

The project of a single-seat fighter with a reverse-swept wing and the HeS 011A engine participated in the competition as part of the "emergency" fighter program. Armament — three MK 108 guns.

Characteristics: wingspan - 8.1 m and its area - 14 m? aircraft length — 9.2 m, height — 3.38 m, empty weight — 2674 kg, takeoff weight — 4094 kg, maximum speed

Turbojet engine HeS 011

at an altitude of 9000 m - 988 km/h, rate of climb near the ground - 1545 m/min, range - 1025 km, service ceiling - 12100 m.

VU R.211a

A project of a single-seat fighter with a VMU/003A engine, which took part in the competition for the development of a “people's fighter” (Wokzaseg). As a result of discussions of preliminary designs on September 15 and 19, 1944, P211a was recognized as the winner, the Heinkel project took the second place. However, already on September 25, E. Heinkel demonstrated a model of his aircraft, and on September 30 he was given a contract to build a “people's fighter” He 1624.

The VU R.211a aircraft had a straight wing and the same plumage located on the tail boom. The engine was located in the fuselage, two guns were installed on the sides of the air intake.

Characteristics: wingspan - 8.45 m, aircraft length -

8.7 m, height - 2.8 m, takeoff weight - 3500 kg, maximum

speed - 860 km / h, range - 600 km, practical ceiling - 8000 m.

VUR.211b

Modernized design of the VU R211a aircraft with swept wings and tail unit.

Characteristics: wingspan - 7.65 m, aircraft length - 8.1 m, height - 3.1 m, maximum speed - 900 km / h.

VUR.215

The project of a single-seat fighter with a pulsating ÿÿ 014 engine, participated in the competition under the program "Miliagigaseg". The engine was installed under the tail boom, its air intake was located in the forward part of the fuselage, the tail unit was U-shaped.

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VUR 213

The fuselage of the fighter was made of sheet steel, the wing and tail unit were wooden structures. Suspension units for launch rocket boosters were envisaged, the landing of the aircraft was carried out on a three-post landing gear that was being produced. Armament consisted of one MK 108 cannon in the forward fuselage.

Characteristics: wingspan - 6.0 m and its area - 5 m? aircraft length - 6.2 m, height - 2.28 m, takeoff weight - 1560 kg, maximum ground speed - 700 km/h, maximum speed at an altitude of 9000 m - 450 km/h, rapid climb

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 capacity near the ground - 1200 m / min, range - 150 km, service ceiling - 10,000 m.

VU R.214

The project of an aircraft projectile designed to operate on well-defended targets. It was assumed that the pilot, after aiming at the target, would leave the aircraft, in the bow of which the combat charge was located.

Characteristics: wingspan - 7.0 m and its area - 10 m °, aircraft length - 7.25 m, take-off weight - 3600 kg, maximum speed - 800 km/h.

VU 222

The development of a project for a large flying boat VU 222 "ULKte" with six engines "Vgato" 323K-2 with a power of 882 kW began in January 1938. The first aircraft took off on September 7, 1940. patrol aircraft. The prototype of the A series was the fourth experimental aircraft VU 222\4, the prototype of the C series was the VU 222\7 (the first flight took place on April 1, 1943).

A total of 13 vehicles of the C series were built, they were equipped with the es-82 E U] long-range quadrille 1506 20 I reconnaissance SE-222, another four unfinished vehicles were scrapped due to the termination of the program at the beginning of 1944 At the end of the war VU 222S-011 and VU 222S-013 were captured by American troops and transferred to the USA, VU 222S-012 went to the British and was tested in England.

Characteristics of the VU 222A (a total of four machines were built): wingspan - 46.0 m and its area - 247 m, aircraft length - 36.5 m, height - 10.9 m, empty weight - 28575 kg, maximum takeoff - 45640 kg, maximum speed near water (take-off weight 25,000 kg) - 309 km/h, maximum flight range at an altitude of 4900 m - 7400 km, maximum flight duration at an altitude of 4900 m - 23 hours,

VU 246

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NORMAL SCHEME AIRCRAFT Climb time to 6000 m — 49 min, service ceiling — 6500 m, armament — one MS 151 cannon in the front turret, one MS 151 cannon in the underwing turrets, one MS 131 machine gun and two MS machine guns 81 in the side windows.

Characteristics of the VU 222C: crew - 11 people, six engines ÿito 207C with a power of 735 kW, wingspan - 46.0 m and its area - 247 m? aircraft length — 37.0 m; height — 11.0 m; empty weight — 30,700 kg; maxi | minimum speed (weighing 46,000 kg) at an altitude of 5500 m - 387 km/h, maximum flight range - 6000 km, maximum flight duration - 28 hours, climb time to a height of 6000 m - 52 min, practical ceiling - 7300 m, armament - one MC 131 machine gun in the bow mount, one MC 151 gun in the upper bow turret, one MC 151 gun each in two underwing turrets, four MC 131 machine guns in side mounts.

Air gun MK 108

Airgun MK 108

VU 238

The draft design of the heaviest flying boat in the world was presented to KIM in February 1941. In the fall, the firm received an order for five experimental aircraft. The first prototype VU 238U1 took off in April 1944.

Airgun MK 108

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tanias she was sunk at the anchorage during the navigation

fighters "Mustang" P-51. The almost finished third, fourth (VU 238V) and fifth (VU 258A) machines were scrapped due to the termination of the program at the end of the summer of 1944.

veta ÿÿ ÿ 2584 (long-range transport aircraft, reconnaissance aircraft and bomber): crew — 10 people, six rv 6036 engines with a power of 1398 kW each, wingspan — 60.2 m and its area 349 m², aircraft length — 43.4 m, height - 12.8 m, empty weight - 54,800 kg, maximum takeoff weight - 100,000 kg, maximum speed with a weight of 90,000 kg at an altitude of 5,000 m - 356 km/h, range with weight 92,000 kg and a speed of 316 km / h at an altitude of 2000 m - 7800 km, armament - four MC 131 machine guns in the bow and stern towers, two installations of two MC 131 machine guns in the side windows, two underwing towers with four MC 131 machine guns, two MS 151 cannons in the upper front turret, under the wing it was possible to hang up to 20250 kg of $C 250 bombs or four 1200 kg torpedoes, four 5C 1000 bombs and 4 Hs 293 missiles (or 2 Vu 143 planning bombs).

Rocket \Maÿÿegÿai No.-1

VU R.250

The project of the land version of the VU 238 flying boat, which received the designation VU 250, was proposed at the end of 1941. It differed from its predecessor only in the absence of a redan, in place of which the bomb bay doors were made, and the presence of a wheeled landing gear with a nose support.

It was assumed that the aircraft could carry out reconnaissance of the US Atlantic coast, and as a bomber it could carry 20,000 kg of bombs at a distance of 7,000 km or 4,000 kg at a distance of 10,000 km. Four prototypes were assembled in parallel with the VU 238 machines. At the end of the summer of 1944, the unfinished machines were broken down due to the termination of the program.

Mazzetai Missile Compartment \-5

3.4. Rocket aircraft projects

W. von Braun Fighter-Interceptor

Missile designer W. von Braun presented on July 6, 1939 to Mr. Goering a memorandum “Proposals for the development of exterminate

tel with a rocket engine. Interceptor with pressurized cabin dol

wives was to take off vertically from a stationary starting position. At the stage of climb, it had to be controlled automatically, after reaching a given height, the pilot took control and carried out horizontal

Missile interceptor W. von Braun (first version)

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AIRCRAFT NORMAL SCHEME years. The landing of the aircraft was to be carried out in a gliding mode on the ventral ski.

For navigation at night, it was supposed to install a moving map device in the cockpit with an indication of the current position of the aircraft. The armament consisted of four cannons in the root of the wing - two on each side. The thrust of the LRE during takeoff was 10,160 kgf, and in level flight - 771 kgf.

Pre-launch preparation took place in the hangar. The aircraft was positioned vertically, with the wing consoles resting on horizontal parallel rails, and the tail section resting on a four-wheeled cart. Along the rails, the aircraft, together with the trolley, moved to the launch pad, from which a vertical take-off was carried out. However, von Braun's idea did not receive support at KIM.

The layout of the rocket A 4 -

5. Pumping unit (HPU) 6. Nozzle of HH

7. Fuel start valve

8. Aerodynamic handlebar

9. Radio antenna

10. Gas steering wheel

11. LRE combustion chamber

12. Oxidizer start valve 13. Steam generator THA

14. Tank with hydrogen peroxide

NORMAL PLANTS

Missile interceptor W. von Braun (second version)

Characteristics of the interceptor: wingspan - 8.5 m, aircraft length - 9.3 m, height - 3.02 m, takeoff weight - 5000 kt, horizontal flight speed - 700 km/h, rate of climb - 151 m/h s, service ceiling — 8000 m, flight time — 15 minutes. X

In the spring of 1941, he proposed a second version of his interceptor, replacing the stationary launch position with a mobile one. The launcher was a tractor with a trailer on which the aircraft was transported. Before take-off, the aircraft was installed vertically between the tractor and trailer, leaning on the wingtips on pipes attached to the tractor and trailer, while the tail section of the aircraft rested on a four-wheeled bogie. But this proposal of W. von Braun was also rejected.

Characteristics of the second version of the interceptor: wingspan - 8.6 m, aircraft length - 9.3 m, height - 3.2 m, takeoff weight - 5080 kg, horizontal flight speed - 690 km/h, rate of climb - 143 m/h s, practical ceiling - 8000 m, flight time - 15 minutes.

Works on the project ‹Ategika»

The study of the possibility of launching missile strikes against the United States began by the group of W. von Braun back in 1940, long before the first flight of the A 4 (U 2) rocket. To increase the flight range, it was assumed on the basis of a ballistic missile A 4 s03-

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give a winged one with a longer range. This modification received the designation A 9. Initially, it was assumed that the shelling of A 9 missiles on the US coast would be carried out either from submarine-towed launch platforms or from nearby islands.

However, with the strengthening of air defense and the US Navy, the German command had to abandon such an idea. The development of a two-stage rocket under the designation A 9/A 10 began, which was supposed to be launched from the territory of Europe. The first stage was the A 10 launch vehicle, the second stage was the A 9 cruise missile with LRE

A9 cruise missile

A9/A10

 with a thrust of 25 tf. The initial weight of the A 9 was about 7 tons, the wingspan was 3.5 m, the length was 14 m, and the maximum speed reached 2800 m/s. It was supposed to place about a ton of explosive in the bow. At that time, only a pilot could provide the required guidance accuracy at a range of about 5000 km, so the development of the manned version A 9 began. It was planned to place the cockpit behind the compartment with the warhead in the nose of the rocket.

The flight scenario for the A 9 / A10 missile should have looked like this. After the launch of the rocket and the separation of the first stage A 10, the second stage A 9 continued its flight with an increase in altitude and speed by the operating LRE. After running out of fuel, the rocket planned, and the pilot took control. He was supposed to carry out further flight using radio signals from

submarines. Having brought the car to the target and stabilizing its trajectory, the pilot had to eject. It was assumed that the pilot who descended on a parachute would be picked up by submarines.

Setting 2 to start position

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NORMAL PLANTS

Project A 46 - manned version of A4

However, in September 1942, when research was in full swing

models of rockets in wind tunnels, work in this direction was stopped in order to concentrate efforts on the production of wingless A 4. In June 1944, work was resumed, but to speed them up, it was decided to use the finished A 4 rocket for flight tests, equipping it with a wing . This modification received the designation A 46, in parallel, its manned version was developed with a pressurized cockpit in the bow.

One of the variants of the A 40 manned rocket was intended for flight tests, it was supposed to install a landing gear retractable in flight and an additional turbojet or ramjet engine in the lower stabilizer.

The designation A 6 was assigned to the project of a supersonic manned photo reconnaissance aircraft, designed for a maximum speed of 2900 km/h, which was a 15.75 m long aircraft with a pressurized cabin and a swept wing with a span of 6.33 m. combined power plant, consisting of a liquid propellant rocket engine

Transportation of the rocket A 4p

76

NORMAL FLIGHT AIRCRAFT of about 12 tf and ramjet, liquid oxygen was assumed as the oxidizer, and methanol as fuel.

The aircraft took off vertically like a rocket, after the liquid-propellant rocket engine was switched off, the ramjet engine went into operation and the machine carried out a horizontal flight for 15–20 minutes. Landing was carried out on the runway with the help of a wheeled landing gear. For decreasing
posta

The rocket AAL DOCTORY range was provided for braking on the start-parachute in the tail section of the fuselage. The radius of the effective position of the aircraft was about 800 km, the flight altitude was up to 95 km. W. von Braun proposed this project to the Luftwaffe high command also as a supersonic interceptor, but his proposals were rejected. The concept of the A 6 aircraft was implemented after the war in the American project of the X-15 aircraft.

Under the designation A 9, a manned version of the rocket with a delta wing was developed, according to some en, its prototype passed under the designation A 7.

On December 27, 1944, tests of the first copy of the unmanned version of the A 46 rocket began, which ended unsuccessfully due to a control system that failed at an altitude of about 500 m. Only the third launch, which took place on January 24, 1945, was successfully completed, the rocket reached a speed of 1200

m / si height 80 km. But before the end of the war, to implement the conceived projects of manned

cruise missiles A 46 and A 9 failed. to the launch of the A 4r rocket

3.5. Projects of the company "VM\"

VMU/ ‹$ÿgaÿÿÿaveg» ÿ

The project of a single-seat jet fighter with a VMU / 003 engine installed behind the cockpit in the fuselage. The air intake was located in the forward part of the fuselage under the cockpit, and on the tail boom there was a two-fin empennage. The wing was swept along the leading edge and straight along the trailing edge.

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NORMAL PLANTS

VM “Sigaruave? 1

Characteristics: wing area - 15 m2, takeoff weight - 2800 kg, armament - two MK 108 guns.

VMY ‹$ (gaÿÿÿseg» P Project of a single-seat fighter with turbojet engine VMY 003 and od

tail plumage. The engine was installed in the lower part of the fuselage, the nose landing gear was retracted

WITH

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VMÿ "5uÿaYÿaret" I

78

NORMAL PLANTS in a niche inside the air intake. The wing was exactly the same as that of the aircraft of the project “No. The cockpit was located above the air intake and the engine; two options for the location of the pilot in the cockpit were worked out: seated and recumbent. Two MK 103 guns were placed in the wing.

VMU ‹$gaÿjareg» Sh

The project of a single-seat fighter of a two-beam scheme with a BMX 003 turbojet engine located in the fuselage. Ahead of the engine was the cockpit, the air intake inlet was located in the forward fuselage. channels,

VM "tartsadeg" Sh

connecting the air intake to the engine, bypassed the cabin from the sides below. The wing was exactly the same as in the first two projects, at the tail ends of the beams, keels inclined inward were installed with rudders used simultaneously as elevators and rudders. Two MK 103 guns were installed in the bows of the beams.

VMÿ ‹tgaVTsaeeg GU

The project of a single-seat fighter with a VMU/018 turbojet engine was similar in layout to the “1” project. However, the aircraft of the ÿU project had large dimensions, the swept wing area was 60 m, the takeoff weight was 10,600 kg, and two MK 108 guns were located in the forward fuselage.

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AIRCRAFT NORMAL SCHEME VMU

The project of a high-speed bomber with a wing in the form of the letter "\/> and four engines - located in the wing two TVD VMY 028 with a power of 2650 kW with coaxial propellers and located under them two TRD VMU / 018 with a thrust of 3450

VM "SrpeNrotret I"

kgf, All engines were used during take-off, as well as during separation from enemy fighters, while in cruise mode only turboprop engines were used. The landing gear had three tandem fuselage struts and two wing struts. The bomber crew consisted of three people and was housed in a pressurized cabin. The defensive armament of the aircraft consisted of two remote-controlled turrets with twin guns in the upper and lower parts of the fuselage.

Characteristics: wingspan - 50.6 m, aircraft length - 32.5 m, fuel capacity - 35,120 l, maximum speed: with two VMU 028 - 660 km/h, with two VMU/ 028 and two VMU/ 018 - 850 km / h, bomb load - 15,000 kg

VMU "SÿpePyoteger P"

The project of a high-speed bomber with a reverse-swept wing and two TVD VMÿ 028 with coaxial propellers. The engines were mounted above the fuselage on pylons. The crew of two people was housed in a pressurized cabin in the forward fuselage, defensive armament consisted of two fixed cannons firing backwards.

Characteristics: wingspan - 35.7 m, aircraft length - 21.5 m,

NORMAL PLANTS

177 L

VM \ U "5srperotret" P

3.6. REZ projects

PE$ 228

The development of a single-seat high-altitude reconnaissance aircraft, which began in 1940, was carried out as part of the research work of REZ on pressurized cabins of high-altitude aircraft, means of rescuing a pilot, working out LRE designs at high altitudes, etc.

PE 228, in fact, was a glider equipped with an NK 509 rocket engine. It was assumed that PE 228, delivered to a height of 10,000 m, should unhook from the carrier aircraft or towing vehicle, turn on the rocket engine and climb to 23 000 - 25 000 m. Further flight should take place

PeE5 228

in planning mode, and the engine was switched on periodically. During the flight, which lasted about 45 minutes, it was planned to conduct reconnaissance with the help of infrared cameras. After running out of fuel, a gliding flight to the base was made, the estimated range was 1000 km.

Wood was used to the maximum in the design of the aircraft, the forward part of the fuselage with a pressurized cabin was separated from the rest of the fuselage by a partition, and three plexiglass panels were used for cockpit glazing. g.s oz with issued landing

In the first experimental car, the red-haired pilot was not sitting, but starting from the second car, he was lying down. The temperature and composition of the atmosphere in the cockpit were maintained by air conditioning. 01, after which it was stabilized by an automatically deployed parachute.When a certain height was reached, the bed, together with the pilot, was ejected from the cockpit with compressed air, then the rescue parachute was opened

RE 228 in flight

Landing PES 228

PEb 228 installed on a carrier aircraft

In the central part of the fuselage there were tanks with top

red cameras, landing ski under the fuselage. In the tail section of the fuselage were the engine and chassis crutch.

The first prototype PE 228\1 (code O-VEO), built in 1943, was tested in a non-motorized mode, first at the OB flight base in Hörsching and then in Rechlin. Bo 217K was used as a carrier aircraft. The second machine REZ 228U2 was tested only in non-motorized flights. The laid-down series of 10 REZ machines Hermetic cabin OE $ 228, rear view 228A-0 was never built until

PE 228 in the hangar

end of the war. RES 228/2 was destroyed at Hörsching in May 1945 during an Allied air raid, and the surviving OE 2281 was captured at Ainring by the Americans. In June 1946, the car was taken to the Ang-Hermocabin RE 228, side view LIA And in 1947 it was handed over to the Slingsby glider company, which used some of the technical solutions used in REZ 228 when developing its own high-altitude glider T 44 Characteristics RES 228; wing span - 17.6 m and its area - 30 m *, aircraft length - 10.59 m, height - 2.92 m, empty weight - 1350 kg, take-off weight - Placement of the pilot in the cockpit 4210 kg, landing speed PE$ 228

speed — 80 km/h, maximum speed — 900 km/h near the ground and 700 km/h at an altitude of 25,000 m, maximum flight range — 1,050 km, service ceiling — 25,000 m.

Wreckage of captured PeES 228

OE$ 346

The project of a high-altitude supersonic reconnaissance aircraft was developed at the end of 1944. It was a further development of the REZ 228 aircraft, but with a swept wing and a two-chamber rocket engine H \ / K 509. REZ 346 was supposed to take off in the air similarly to its predecessor and after completing the task, land on the ventral ski. The pilot was located in the pressurized cabin lying down, access to it was carried out through a lantern that moved forward. The serial production of the aircraft was planned to be organized at the Siebel company, by the end of the war a wooden full-size mock-up was made and the assembly of the first prototype under the designation 91 346 began.

After the end of the war in | | 1946, at the direction of the Soviet leadership in Germany, built or three experimental vehicles under the designation "346". The aircraft characteristics research program was terminated in 1951 after the third prototype was lost during flight tests.

Characteristics of OE$ 346: wingspan - 9.0 m, aircraft length - 13.45 m, height - 3.54 m, takeoff weight - 4300 kt. maximum design speed - 2560 km / h, landing speed - 160 km / h, service ceiling - 30,000 m.

1-5 at starting position

NORMAL PLANTS

3.7. Dornier projects

RoR256

Project of a two-seat fighter, fighter-bomber and night fighter with two HeS 011 turbojet engines under the wing. The navigator was located in a separate cockpit in the middle part of the fuselage facing the tail. Armament consisted of four MK 108 guns, the aircraft could carry two 500-kg bombs.

Characteristics: wingspan - 15.45 m, aircraft length - 13.6 m, maximum speed - 882 km / h.

ro 317

The high-altitude bomber, which participated in the rera as part of the WotBeg-V program, became a further development of the Oo 217 aircraft. The company was ordered six || experimental machines, the first copy of Oo 317 \ 1 on- | entered testing in 1943. The tests did not reveal any advantages over the Bo 217R, the remaining five vehicles were produced under the designation "Ro 217K" (carriers of Hs 293A missiles), and the program was terminated.

Characteristics: crew - four people, two OV 603 engines, wingspan - 20.65 m, Start aircraft length - 16.8 m, height - 5.45 m, maximum weight - 17.5 - 24,000 kg, maximum speed at an altitude of 7,600 m - 665 km/h, cruising speed - 536 km/h, flight range with an additional fuel tank - 4,000 km, service ceiling - 10,500 m, armament consisted of remotely controlled installations - two upper (front and rear) two MS 131 machine guns each, one in the tail cone with one MS 131 machine gun and one front lower with two MS 81 machine guns, the bomb load was placed in the bomb bay (5600 kg) and under the wing (3600 kg).

At the same time, a machine of the B series (Ro 217V) was designed with OB 610A engines with a power of 2200 kW each and a wing span increased to 26 m; by the time the program was terminated, a full-size wooden mock-up was built.

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NORMAL PLANTS Oo 335

In 1942, the firm won a competition for a strike aircraft development program. The features of the single-seat fighter-bomber, designated Oo 335, were the tandem arrangement of engines (the front one rotated the pulling propeller, the rear propeller) and cruciform plumage. The cockpit was equipped with an ejection seat, a Revi S12/0 sight, which was used both for firing from cannons and for dive bombing, a radio compass EiS 167Y K/T, stations RIS 25a and EiS 1254. The KEEL and rear propeller were dropped; in case of a forced landing on the fuselage, the lower one was dropped | yy rii keel. The first flight of the Oo B 3351 took place on October 26, 1943, the ninth aircraft (ro 335\9) became the prototype of the A series. By the time the American troops captured the factory in Oberp Faffenhofen, 13 Ro 335A machines had been built and 15 more were in the assembly.

Characteristics: two OV 603E-1 engines with a power of 1380 kW each, a wing span of 13.8 m and an area of 37.3 m, aircraft length - 13.85 m, height - 5.0 m, empty weight - 7266 kg, takeoff - ny - 9600 kg, maximum speed at an altitude of 6500 m - 758 km / h, cruising speed - 682 km / h, range at the most favorable speed (450 km / h) - 2050 km, climb time to a height of 8000 m - 14 , 5 minutes, practical ceiling - 11400 m, armament - one MK 103 gun, two MS 151 guns, 2 5C 250 bombs in the bomb bay and 2 5C 250 bombs on external hangers.

Aircraft Oo 335

3.8. BUT institute project,

Ruth. "]aza5ezLeg"

As a result of the research carried out by GÿI, he developed the PMI airborne fighter-bomber. "] Azeri | eg", taking

NORMAL PLANTS

BI, "Yasaseriet"

based on a previously developed project of a fighter glider. The aircraft was made mainly of wood, had a straight wing and spaced tail, could carry two 5S-250 bombs weighing 250 kg each under the wing. The Az 014 pulsating engine was located above the rear fuselage in a semi-recessed position, and the air intake visor protruded upwards above the middle part of the fuselage. The pilot was placed in an armored cockpit lying down, under the fuselage there was a retractable landing ski.

Characteristics: wingspan - 5.0 m and its area - 5.5 m2, aircraft length - 3.0 m, flight weight - 640 kg, fuel weight - 160 kg, maximum speed - 900 km/h.

3.9. Fieseler project

Ei 166

In 1940, the technical director of Fieseler, Erich Bachem, developed his own project of a vertically launched interceptor Ei 166 in 1940, similar to the design of W. von Braun, in two versions.

The first variant (Nogepareg G) was a combination of a rocket with a liquid propellant rocket engine and a single-seat interceptor aircraft with two Ioto turbojet engines installed in the wing.

004, the so-called "horse and rider" system. With the help of a rocket, the plane rose to a height of about 12,000 m, then the rocket was dropped, and the plane switched to the go mode.

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4 NORMAL PLANTS

E 166/1

horizontal flight. The dropped missile was dropped to the ground by parachute, after which it could be reused. The interceptor landed on the ventral ski. The armament consisted of two cannons placed in the wing roots.

88

NORMAL PLANTS

Characteristics: take-off weight of the system - 10,000 kg, flight

aircraft weight - 5620 kg maximum speed - 830 km / h, flight duration - 45
min.

The second option (Noÿepyareg P) was

two-seat aircraft with a rocket engine in the rear fuselage,

the landing was carried out in a planning mode on the ventral fuselage

ski.

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NORMAL PLANTS

Characteristics: takeoff weight - 13,500 kg, maximum

speed - 830 km / h, flight duration - 45 minutes.

3.10. Focke-Wulf projects

E ‹Javeg"

The project of a light day fighter, developed in 1942. Made in four versions.

EU "Yareg" RI had a reverse swept wing, a butterfly tail and a ÿito 004 engine located on the fuselage behind the cockpit. Armament consisted of four guns MK 108 and MS 151 in the bow

a ==] fuselage. Characteristics of E "Javet" RI: wingspan - 8.2 m, aircraft length - 10.5 m, maximum speed - 930 km / h.

E "]aveg" RI had a conventional wing and keel, similar to Eÿ 190, the BM 003 engine was located below under the forward fuselage. The project was completed in March 1943.

Aviation gun MK 108

RU R. "Javeg"

90

NORMAL PLANTS 1

EX ‹Jareg» ÿÿ outwardly resembled ÿÿ, but the wing was ordinary, the moth plumage had no sweep, and the engine was shifted slightly back. The project was completed in December 1942, later a similar scheme with a slightly modified tail unit was implemented by the designers of the Heinkel company in the He 162 aircraft.

RU "Jareg" RIU had a small swept wing along the leading edge, a spaced tail, the engine inlet was located on both sides of the cockpit.

Characteristics of EZ Laveg RÿU: wingspan - 8.2 m, aircraft length - 9.25 m, maximum speed - 840 km/h.

GA R.Sh "Jare"

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} NORMAL PLANTS

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RU RJU "Jave" EU RI

The project of a light single-seat fighter was completed in June 1943. The ato 004V engine was located under the fuselage, the main landing gear retracted into the wing, the front landing gear into the forward part of the fuselage forward in flight. Two fuel tanks were located in the fuselage behind the cockpit. Armament consisted of two MK 108 or MK 103 cannons with 70 rounds of ammunition each in the forward fuselage and two MS 151 cannons with 175 rounds of ammunition in the wing root.

Characteristics: wingspan - 9.7 m and its area - 15 m? aircraft length - 9.85 m, height - 4.43 m, empty weight - 2410 kt, fuel weight - 650 kt, takeoff weight - 2350 kg, maximum speed at an altitude of 4000 m - 870 km/h, rate of climb near the ground - 20 m / s, practical ceiling - 12,400 m, range - 640 km.

E\/-interceptor

In 1944, Focke-Wulf developed an aircraft project that had a swept wing and a T-shaped tail. The power set of the wing was made of wood, the skin was metal. The 509ÿ-1 liquid-propellant rocket engine was supposed to be used as a power plant, the pilot was seated in the cockpit, two MK 108 guns were installed in the wing from both sides of the fuselage.

92

Y

NORMAL PLANTS

Ree interceptor

Aircraft characteristics: wingspan - 6.0 m and area - 10 m, aircraft length - 4.8 m, takeoff weight - 2133 kg, maximum speed - 800 km/h, climb time - 5900 m in 60 s 16,500 m in 100 s.

EU "WoSh$Niaoteio"

The project of the light fighter EZU "Wok $ Yegei" ("People's Aircraft") was developed under the "WoK5areg" program in September 1944. The aircraft had a T-shaped tail, TRD VMY 003 in the bow. The armament consisted of two MK 108 guns on the sides of the air intake. The project was made in four versions: two with a swept wing and two with a straight one.

Characteristics: wingspan - 7.5 m and its area - 13.5 m? aircraft length - 8.8 m, height - 2.85 m, fuel weight - 660 kt, takeoff weight - 3050 kg, maximum speed at an altitude of 6000 m - 820 km/h, rate of climb near the ground - 14.5 m/h s, takeoff distance - 1000 m, flight duration at an altitude of 10,000 m - 42 min.

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GAY "Yoyezziyogeid" Ta 183

The company submitted three projects to the competition within the framework of the “emergency” fighter program - PI, RP and RUP.

The first of them was an aircraft with swept wings and feathering, the HeS 011 engine was located in the fuselage. In the wing there are two fuel tanks with a volume of 1565 l, four MK 108 guns were installed on the sides of the air intake inlet.

RURU

with a set of 80 shots. Under the fuselage, a niche was provided for hanging one bomb in a semi-submerged state. The design of the aircraft was supposed to use steel, duralumin and wood.

The second project slightly differed from the first one, the cockpit was slightly shifted back and the shape of the leading edge of the keel was changed.

RUE "ESHeeg" was an aircraft with a twin-boom Ta 183 tail and a Ne5 011 engine installed in

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AIRCRAFT NORMAL SCHEME rear fuselage. The inlet devices of the engine air intake were located in the root part of the wing on both sides of the fuselage. Initially, it was planned to place an additional NÿK 509A-2 LRE from below under the turbojet engine, however

A mock-up sample in the final version from it from the aircraft R.I. "Eyzeg"

seemed. Armament consisted of four MK 108 guns — two in the wing and two in the forward fuselage. A wooden full-size mock-up was made.

According to the results of the meetings held on February 27 and 28, 1945, the project PI was declared the winner, which received the serial designation Ta 183 (after the name of the technical director of the Focke Wulf company Klank).

Characteristics of Ta 183: wingspan - 10.0 m, aircraft length - 9.35 m, height - 3.48 m, take-off weight - 4300 kg, maximum speed at an altitude of 7000 m - 955 km/h , rate of climb near the ground - 1225 m / min, service ceiling - 14,000 m.

Characteristics of E RUP "Eshkheg" ("Daredevil"): wingspan swept 329 - 8.0 m, length of the aircraft - 9.8 m, German special-maximum SHEETS with the model speed of the ENIZET RU

830 km/h

(front view)

The cockpit of RUE "EYZET"

Ta 283

Aircraft RUE "Eizet", rear view

The project of a single-seat fighter with two ramjet engines installed on the sides of the horizontal tail, the cockpit was located at the beginning of the keel. The NU 509 booster rocket engine was installed in the rear fuselage. The armament consisted of two MK 108 cannons from the bottom in the forward fuselage.

Characteristics: wingspan - 8.0 m, aircraft length - 11.85 m, maximum speed - 1100 km / h.

Ta 283 EX ‹1000-1000-1000-Voteger Rgoÿekÿ"

Under this designation, three variants of a high-speed bomber with two Ne$ 011 turbojet engines were developed, participating

The air intake of the aircraft RUE "EYZEU" "Izer"

Purge model RUE

in the summer of 1943 in the competition under the program "1000-1000-1000". Option "B" was made according to the "flying wing" scheme, and options "A" and "C" - according to the normal scheme,

Characteristics of variant "A": wingspan with a sweep of 35° - 12.65 m and its area - 27 m', aircraft length - 14.2 m, height - 3.75 m, empty weight - 4225 kg, take-off weight - 8100 kg, maximum speed - 1000 km / h, range - 1000 km, bomb load - 1000 kg (one 5C 1000 bomb).

Characteristics of option "C": wingspan - 12.65 m, its area - 27 m?, aircraft length - 14.2 m, height - 3.75 m, empty weight - 4225 kg, takeoff weight - 8100 kg, poppy

Y Y

E "1000-1000-1000" C

RU "1000-1000-1000 A

maximum speed - 1015 km / h, cruising speed - EU R.0310.025-1006

960 km/h, landing speed - 175-240 km/h, flight range at an altitude of 13600 m - 2500 km, take-off distance - 960 m, rate of climb near the ground - 21.2 m/s.

The project of a single-seat high-altitude fighter was completed by the company in October 1944.
The cruciform tail unit had lower and upper vertical fins,

swept its ends attached to the wing. The Az 413 engine with two counter-rotating pusher propellers was located in the rear fuselage, one fuel tank with a capacity of 1200 liters was located in the fuselage and two tanks with a capacity of 300 liters each were located in the wing. Armament consisted of two MK 103 cannons and two MS 213 cannons in the forward fuselage. A two-seat version of the aircraft was also developed.

Characteristics: wingspan - 16.4 m, aircraft length - 14.2 m, patrol time at an altitude of 10,000 m - 2 hours.

Suspension option VU 246

2: frost Variant of suspension VU 246 under EU-190

RU ÿ0310.025-1006

Suspension VU 246 for He 111

Not R.1068

Rocket fighter project. It was assumed that with the help of four starting rocket engines it would take off from the launcher used to launch the U 1 cruise missiles, landing was carried out on the ventral ski. The pilot in the cockpit was lying down.

The characteristics of the aircraft: wingspan - 6.7 m, length - 9.87 m, maximum speed - 870 km / h, armament - two MS 151 cannons in gondolas under the wing and VAM unguided rockets.

Not R.1073.01-04

Aircraft design with two He 011 or VMU 003 turbojet engines located above and below the fuselage. Butterfly-type tail, two MK 108 cannons are installed in the forward fuselage.

HeP 1073.01-04

° ny engine, respectively, to the right. The main racks retracted back into the fuselage.

Characteristics: wingspan - 12.0 m, aircraft length - 10.32 m, maximum speed with Neb 011 engines - 1010 km / h.

NORMAL PLANTS Not R.1077 "uaNa"

The project of the mini-missile interceptor Ne P1077 "ÿiÿa" was developed in 1944. The aircraft had a trapezoidal two-spar wooden wing with tips bent down, wood

Missile interceptor Ne R. 1077 "iya"

ventilated fuselage and spaced vertical tail, also made of wood. Two retractable ventral skis were used as landing devices. Two MK 108 cannons were placed in the fairings on both sides of the cockpit, and the NU / K 509A-1 LRE was placed in the rear fuselage. In the tail section of the fuselage, attachment points were provided for launch boosters during launch from a ground-based launcher.

Ner 1077 iya "P

NORMAL PLANTS

NORMAL PLANTS Be P.1077 "Koteo"

Reconstruction of the He P.1077 "La" mini-missile interceptor into an airborne fighter. Instead of a liquid-propellant rocket engine above the fuselage, in the tail section, a PuVRD ÿÿ 014 was installed.

Ner 1077 "iy"

The project was developed in two versions - R1077 "Pa and R1077 ‹ÿshÿa 1". The plane "]aNa 1" had a cockpit with the pilot lying down, and "Jia P" - a cockpit with the pilot sitting.

Characteristics: wing span - 4.6 m and its area - 7.2 m, aircraft length - 6.8 m, height - 1.0 m, takeoff weight - 1795 kg ("L Na P" - 1840 kg), maximum speed - 980 km / h ("Laa P" - 970 km / h), rate of climb - 192 m / s.

Hep 1077 "Koteo"

NORMAL PLANTS

new tail, also made of wood. Two retractable ventral skis were used as landing devices. The pilot was sitting in the cockpit, two MK 108 guns were installed in the fairings on the sides of the cockpit,

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Ner 1078 A

AIRCRAFT OF THE NORMAL PLAN In the tail part of the fuselage, attachment points for launch boosters were provided. Aircraft characteristics: wingspan - 4.6 m and its area - 7.2 m?, aircraft length - 6.8 m, height - 1.0 m, takeoff weight - 1795 kg, maximum speed - 980 km/h.

Not R.1078A

The project of a single-seat fighter with the Nez 011 turbojet engine located in the lower part of the fuselage participated in the competition for the “emergency” fighter program. The wingtips were bent down, two MK 108 guns were located in the forward fuselage.

Characteristics: wingspan with a sweep of 40 ° - 8.8 m, aircraft length - 9.48 m, maximum speed - 980 km / h.

Not R.1079

Project of a multi-purpose aircraft with two Neb 011 turbojet engines in the wing roots and a butterfly-type tail unit. Four MK 108 cannons were installed from below in the forward fuselage. The fighter version (Series B) provided for the suspension of unguided rockets under the wing, the bomber version (Series C) for bombs, and the reconnaissance version (Series A) cameras were to be installed in the fuselage.

Ner 1079A

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NORMAL PLANTS

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108

Layout diagram He 162 A

NORMAL PLANTS

Characteristics: wingspan swept 35 ° -

13.0 m, aircraft length - 14.25 m, height - 3.4 m, maximum speed - 950 km / h.

Not 162A

On September 30, 1944, the Heinkel firm was given a contract for the construction of the "people's fighter" He 162A. The terms of the contract were = ——_ | extremely tough: the development of the aircraft R had to be completed by January 1, 1945. By October 29, the drawings were ready, and already in December, the first flight of the He 162 \ 1 experimental machine, piloted by test pilot Captain Peter, took place. Flight pro

The flight of the experimental one is relatively safe, although when trying to develop maximum speed,

Aircraft Not 1621

On December 10, 1944, a niche sash was torn

chassis. However, on December 10, while the plane was being shown to senior German officials, while flying at low altitude at high speed, the right aileron came off, the plane crashed, and Captain Peter died.

12 days later, the second prototype took off: averona. He 162U2 aircraft, on which two MK 108 cannons were installed. The aircraft had a straight wing and spaced tail. TRD VMU/003 was installed above the fuselage behind the cockpit. The fuselage was made of duralumin, and the wing (with the exception of the tips made of aluminum alloy), the wings of the front landing gear niche and the skin of the radio compartment

The loss of stability and hope is made of wood. In the cockpit ÿÿ there was a minimum of necessary instruments and

tapultable chair (fired with a squib). Behind the cockpit was the main fuselage fuel tank with a capacity of 695 liters, and in the wing there was an additional tank with a capacity of 180 liters. Not 162 A

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NORMAL PLANTS

The production of He 162A was organized at the plant of the Heinkel firm in Rostock, the plant of the Junkers firm in Bernburg, and the plant of the firm Mschewerke Stbh. The estimated rate of production was to be 1,000 vehicles per month in April 1945, and 2,000 in May.

Since January 1945, the “EgrgoBipezkottapao 162” subdivision conducted military tests of the A-series vehicles. barrel, Not 162A-2 - two aa guns MS 151 with ammunition

lsktom 120 shots

on the stem. With the normal takeoff weight of the aircraft, its flight time was twenty minutes, in the reloading version (2971 kg) with an additional supply of fuel - two hours. In addition to combat vehicles, they developed a two-seat training version of the He 1624-3 without weapons and with a reduced volume of the fuselage fuel tank. By the end of April, there were about 50 He 1624 machines in the fighter squadron]ÿ 1. Until May 1945, a total of 116 were built.
aircraft,

With the end of the war, a large number of He 162 went to the allies and they carefully studied.

Characteristics of He 162A "Za!atapaet" ("Salamander"): wingspan - 7.24 m, aircraft length - 9.27 m, height - 2.6 m, takeoff weight - 2495 kg for A-1 and 2466 kg for A-2, maximum speed — 880 km/h, service ceiling — 12,000 m.

Not 162 A, front view

Not 162 Ana parking lot

Combat unit of He 162 A aircraft

Not 162V

The He 162B project was developed as part of the Miliagigareg program based on the He 162A aircraft. All changes, fak

AIRCRAFT OF THE NORMAL SCHEME literally reduced to the replacement of the VMA 003 turbojet engine with a pulsating one.

The He 162V-1 had two pulsating 45 014 engines located side by side, mounted on top of the fuselage closer to the tail. Two guns MK 108 or MS 151 were to be installed as armament.

Not 162 V-1

Characteristics: total engine thrust - 670 ktu, wing span - 7.2 m and its area - 11.15 m3, aircraft length - 90 m, height - 2.55 m, takeoff weight - 3300 kg, maximum speed ground - 810 km / h, rate of climb near the ground - 1098 m / min, service ceiling - 8000 m, range - 410 km.

Not 162V-2 differed from the previous version in that it was supposed to install one pulsating engine ÿÿ 044 with a thrust of 500 kgf.

Characteristics: wingspan - 7.2 m and its area - 11.15 m? aircraft length - 9.0 m, height - 2.55 m, take-off weight - 2900 kg, maximum speed near the ground - 710 km / h, rate of climb on the ground - 720 m / min, service ceiling - 6500 m,

range - 380 km.

Not 162 V-2

b

NORMAL CIRCUIT AIRCRAFT Not 162C

The design of the He 162C aircraft (originally He R.1073) was a further development of the A series aircraft, but with the He 011 turbojet engine, participated in the competition for projects under the "emergency" fighter program. It was developed in two versions: one with a normal sweep wing, the other with a reverse sweep wing.

Characteristics: wingspan - 9.0 m, aircraft length - 9.25 m, maximum speed - 1010 km / h, range - 1000 km, armament - two guns MK 108.

Not 345

Not 162 C

Bomber project with four Lato 004C turbojet engines located under the wing (competitor of the Ag 2340 bomber). At the end of 1944, KIM issued a contract to the company for the construction of five prototype aircraft and 20 pre-production aircraft.

Characteristics: take-off weight - 18600 kg, maximum speed - 850 km/h, armament - 3500 kg of bombs and two MS 151 guns in the rear fuselage.

AIRCRAFT NORMAL SCHEME 3.12. Henschel projects

In May 1944, KIM issued a contract to the Henschel firm for the construction of prototypes of the H$ 152 jet attack aircraft - two machines of the A series and four B series.

Outwardly, the new attack aircraft looked like the "people's fighter" He 162. The engine was located on the fuselage, the tail unit was spaced apart. The pilot was located lying on the glazed forward fuselage.

The aircraft fuselage was made of aluminum alloys, the wing was made of wood, and the tail unit was made of honeycomb structures.

The pilot climbed into the cockpit through the upper armored hatch. To protect against projectiles and bullets, the pilot's bed was made of 8.5 mm armor, a transparent screen made of reinforced glass 68 mm thick was installed in front, and it was also covered from above with a plate of reinforced glass 50 mm thick. In addition, the cabin was made of 8 mm armour, and an armor plate 50 mm thick was installed under the front glass screen.

On the right side of the pilot was the emergency escape lever. When it was pressed in flight, the front landing gear was released, which was under the pilot's bed, the rear part of the bed was disconnected and lowered down. After that, the pilot slipped out of the plane through the niche of the front pillar and descended by parachute.

In total, it was supposed to develop three variants of the aircraft:

- Hz 132A - a dive bomber with a ZMU 003A-1 engine and a bomb load of 1000 kg;

- Hs 1328 - attack aircraft with a Lito 004V-2 engine, two MS 151 guns with an ammunition load of 250 rounds and a bomb load of 500 kg;

- ÿ$ 132ÿ - attack aircraft with a He 011 engine and an additional Nÿÿ 509 liquid-propellant rocket engine in the tail section, armament consisted of two MK 108 cannons with an ammunition load of 60 rounds, two MS 151 cannons with an ammunition load of 250 rounds and a bomb load of 1000 kg.

The first experimental machine H$ 132U1 was ready in the spring of 1945. At the time of the capture of the Henschel plant in Austria by Soviet troops, two more machines were under construction - H$ 132U2 (80% complete) and H 132U3 (75% complete).

Characteristics: wingspan - 7.8 m, aircraft length - 8.8 m, height - 2.95 m, empty weight - 2241 kg, takeoff weight - 3512 kg, maximum speed at an altitude of 6000 m - 783 km / h, landing speed - 154 km / h, service ceiling - 11,200 m, range - 530 km.

3.13. Junkers projects

Ja EE-009

In 1939, the Junkers firm developed a project for the ÿi EE-009 interceptor, which takes off from an inclined mobile launcher. A bunch of engines was located in front of the fuselage: and the nana yura provided for the installation

7] 10 low-power Ne 6 turbojet engines - a slot above and four below the cockpit, the second option provided for the installation of four He 6 turbojet engines under the cockpit and six pulsating air

jet engines above the cockpit. During takeoff, launch rocket boosters were used, and a ventral ski was provided for landing. The pilot was lying down in the cockpit, two MK 108 guns were located on the sides of the cockpit. The fuel supply was only enough for a few minutes of flight. The project was not further developed.

EA 61

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AIRCRAFT NORMAL SCHEME!

Characteristics of ÿ and EE-009 NiBareg (Vertical Fighter): wingspan - 4.0 m, aircraft length - 5.0 m, takeoff weight - 2000 kt, landing speed - 160 km/h, maximum speed — 905 km/h, rate of climb — 77 m/s, service ceiling — 15,700 m.

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NORMAL FLIGHT AIRCRAFT Ta EE 101

The Mistel long-range reconnaissance project was developed in 1942. The carrier aircraft was equipped with five OV 613 engines mounted on the leading edge of the large-span wing. The main two-wheeled landing gear was retracted into the nacelles of the external engines, and the tail one-wheeled landing gear was retracted into the fuselage. The crew of the carrier (3-4 people) was placed in a pressurized cabin raised above the wing, the defensive armament consisted of four remote

but controlled turrets of twin machine guns of 13 mm caliber: one in front and one in front, = behind the cockpit and two under the fuselage. ÿi ret

A reconnaissance aircraft with a wingspan of 15 m was installed on the carrier; a crew of two people was placed in its pressurized cabin. Near the given area, the reconnaissance aircraft uncoupled from the carrier, performed the task in autonomous mode, after which it returned to the carrier aircraft and landed on it. Then the whole bunch returned to the base.

Characteristics of the carrier aircraft: wingspan - 700 m, aircraft length - 26.0 m, height - 96 m, maximum speed - 760 km / h, range - 17,000 km, service ceiling - 12,000 m.

ÿi HER 126 “EAT

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NORMAL PLANTS Jÿ EE 12

The company "Junkers" submitted to the competition under the program "Mÿpÿagigavet" the project ÿi EE 126 in two versions, which differed in the design of the chassis: ÿi EE 126 "ESH" with a wheeled chassis and ÿo EE 126 "Sh" with two retractable landing skis and an increased

ÿi EE 126 "th"

up to 8.46 m aircraft length. The oscillating engine ÿÿ 044 was installed above the fuselage and attached to the front pylon and short keel (installation scheme resembled ÿÿ 103). The fuselage is all-metal, the wing and tail unit are wooden. The pilot was seated in the cockpit, two built-in cannons MK 108 or MS 151 were installed on the sides in the forward fuselage. $2 each. On the fuselage nose cone

a windmill of an electric generator was installed, in the rear part of the fuselage there were attachment points for launch boosters.

Before the end of the war, the company managed to study the wind tunnel models of the aircraft and build a wooden full-size model.

After the war, the ÿi Eÿ 126 project attracted the attention of the Soviet military leadership. Since the technical documentation was destroyed by the Germans before the surrender, in October 1945 in the Soviet-German OKB-1, organized in Dessau (Ger

 mania), began the design of the aircraft under designation EE-1 26.

In May 1946, the construction of the first experimental machine was completed. This machine was structurally different from the one developed by the Junkers company: it had somewhat larger dimensions, instead of a single-fin plumage - a spaced two-fin tail, the guns were located under the cockpit, there was a ventral landing ski, etc. e. The very first towing tests of the prototype s4 ended in disaster in May 1946. The tests of the second experimental machine were more successful for 60 years, however, the government commission, headed by the aircraft designer A.S. Yakovlev, gave a negative opinion on the possibility of using the EE-126 as an attack aircraft. Subsequently, three experimental machines were used at the FRI to study the nature of the engines, as well as the features of taking off from a ground-based catapult and landing on a ski.

After a thorough study of German pulsating engines, a number of their shortcomings were revealed: a short engine life due to the rapid failure of the valve array and low efficiency, poor altitude characteristics, vibration, etc.

Characteristics of ÿi HER 126 “EP: wingspan - 6.65 and its area - 8.9 m? aircraft length - 7.45 m, empty weight - 1100 kg, takeoff weight - 2800 kg, fuel weight - 1100 kg, maximum speed - 780 km / h, rate of climb near the ground - 480 m / min. range - 350 km, flight duration at 60% engine thrust - 45 min.

Scavenging aircraft model ÿi EE 126

EA 265

Jo EE 127

The developed project of the JO EE 127 "a" mini-missile interceptor implemented the concept of conventional aircraft takeoff and landing using a three-wheeled retractable landing gear. ÿÿ EE 127 was equipped with NUK 509ÿ-2 LRE, the pilot was seated in the cockpit, two built-in guns were installed on the sides of the cockpit

MK 108, Fuel was placed in three fuselage tanks: 500 kg of the S-5yu component in one tank and 1088 kg of the T-Zyu component

In two tanks, On the nose cone of the fuselage was installed

a windmill of an electric generator, in the tail section of the fuselage - attachment points for launch boosters.

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J d a. NORMAL SCHEME AIRCRAFT NORMAL SCHEME AIRCRAFT Characteristics of the aircraft: wingspan . rer I 1"

wing area - 6.27 m, area - 8.9 m, aircraft length - 7.45 m, height - 2.3 m, take-off weight - 4900 kg, maximum speed at an altitude of 6000 m - 950 km/h.

The nose of the model aircraft ÿi EE 127

Ja 187

An all-metal two-seat aircraft, a further development of the ÿi 87. ÿi 187 was equipped with a ÿito 213A engine in the forward fuselage, a feature of the aircraft was the tail empennage swivel around the longitudinal axis. This was done in order to ensure that in flight, by turning the keel down, for the rear remote-controlled rifle installation, unhindered firing at the attacking aircraft and 187 destroyers from the tail

Aircraft cockpit interior Aircraft cockpit ÿi 187 enemy lines. 187

The bomb load consisted of one 500 kg bomb under the fuselage and two 50 kg bombs under each wing console. A full-size wooden model of the aircraft was built and aerodynamic tests of the models were carried out, however, in the fall of 1943, after the design of the ÿi 287 began, work on the ÿi 187 was stopped.

Characteristics: wingspan - 18.06 m, aircraft length - 11.8 m, height - 3.9 m.

Ja 287

The Junkers firm began designing the long-range jet bomber ÿi 287 in the summer of 1943. In accordance with the terms of reference, it had to carry 4000 kg of bombs at a distance of up to 7000 km with a maximum flight speed of up to 900 km/h, the Lito turbojet engine was planned as a power plant 004.

Scheme of changing the position of the tail unit of the aircraft No. 187

120 121

NORMAL PLANTS

Plane and 287

As a result of studies in wind tunnels of models of various layouts, a variant with a negative swept wing was chosen, which made it possible to tighten the stall at the ends of the wing and improve take-off and landing characteristics compared to a straight-swept wing. However, negative features were also revealed: at high speeds, wing divergence occurred, which could eventually lead to its destruction.

To reduce the construction time of an experimental machine, on which it was supposed to study the effect of various flight modes on the aerodynamic characteristics of a negatively swept wing, the company's specialists used

Aircraft ÿi 287, top view

AIRCRAFT OF THE NORMAL SCHEME brought finished parts and assemblies from production aircraft. The fuselage was taken from He 177A3, the tail unit - from ÿi 188, the two-wheeled nose landing gear - from the captured American B-24 bomber, the wheels of the main struts - from ÿi 352. Four Ito 004 turbojet engines were installed on the aircraft: two on the sides in the nose parts of the fuselage and two under the wing, under the engine nacelles, launch boosters were suspended.

The first flight of the prototype ÿu 287-1 took place on August 16, 1944. The results of flight tests, during which the maximum speed of 650 km/h (in dive mode) was reached, formed the basis for improvements during the construction of the second prototype.

While the flight tests of the first experimental machine were going on in the autumn, G. Goering issued an order to suspend work on ÿu 287. At a meeting held after this, the status of work on] 287 and its competitor, the Arado project AgE 555, was discussed. As a result of three days The discussion noted the unsatisfactory state of affairs with the development of long-range bombers. The representatives of the firms present at the meeting were ordered to submit their proposals on this issue by March 1945.

In December 1944, the Arado firm stopped work on the At E.555 project, and the Junkers firm in early March of the following year presented a modified second experimental machine ÿi 287U2 (OCHEE 131) with six VMA 003A turbojet engines under the wing (three in one bundle) as a prototype of the A-1 series, the design speed reached 800 km/h, the bomb load was up to 4000 kg, and the takeoff weight was 21,200 kg. Four He 011 turbojet engines were supposed to be installed under the wing on the V-1 series machines, and two VMY 018 turbojet engines on the V-2 series machines.

Shortly before the end of the war, during the bombing of the Junkers plant by allied aircraft, the first prototype aircraft was damaged, and the unfinished second ÿi 287 \ 2 was captured by Soviet troops. After the war, he became the prototype for

ÿi 287 before testing

NORMAL PLANTS

experimental bomber EE-131, developed by VOKB-1 in Dessau. The built prototype EE-131, which included some units removed from ÿi 287\2, was transported to the Soviet Union and studied at TsAGI and LII. Work on the EE-131 was stopped in 1948.

ZUR Epgÿap E4 on PU

Jo EE 132

Project of a long-range bomber with six Ito 004 turbojet engines in the wing root. The crew of five was housed in a pressurized cabin in the forward fuselage, the landing gear consisted of a nose two-wheeled rack and three main ones (two underwing single-wheeled and one ventral tandem with two wheels). The fuselage housed a bomb bay 12 m long for 5000 kg of bombs, defensive armament consisted of

three remotely controlled twin-blowing 20-mm turrets: two behind the cockpit (one aircraft model on top of the fuselage, the other below) and one 4 HER 132 TAIL.

Tests of aircraft models in wind tunnels were carried out at the beginning of 1945; before the end of the war, a full-size wooden mock-up
aircraft.

After the war, by order of the Soviet command, OKB-1 developed the Eÿ-132 project and it was planned to build two experimental machines. However, in 1948 the program was terminated.

Engine section G 55

NORMAL PLANTS Characteristics: wingspan with a sweep of 35° - 52.4 m and its area - 161 m *, aircraft length - 20.8 m, height - 8.4 m, empty weight - 31,300 kg, fuel weight - 18,000 kg, takeoff weight — 65,000 kg, cruising speed — 850 km/h, maximum speed — 930 km/h, landing speed — 190 km/h, rate of climb — 15.5 m/s, service ceiling — 10 300 m, range - 3500 km, maximum flight time - 2.7

h.

3.14. Messerschmitt projects

Me 262

Firm "Messerschmitt" from the end of 1938 began to work on the project of the first front-line jet fighter. As a result of working out various layout options (single- or twin-engine), © stopped at lesson 21065. In the summer of 1939, an application was sent to the VGM for the development of a twin-engine jet fighter. On March 1, 1940, representatives of KIMOS examined a wooden model of the aircraft, after which the company was given a contract for the manufacture of three prototypes of the aircraft, which received the designation Me 262. In early 1941, the machines were ready

s, but there were no turbojet engines for them yet. Therefore, it was decided to equip the first copy of the Me 262\1 with a ÿito 2106 piston engine; it first flew on April 18, 1941. Its competitor He 280, equipped with two He $ 8 turbojet engines, made its first flight on April 2 of the same city. The first flight of the Me 262\3 aircraft with two ÿito 004 turbojet engines took place in March 1942.

Aircraft He280

Purge model E 55

NORMAL PLANTS

Scheme Me-262. Side and front views

The official decision to start mass production of the Me 262 was made in June 1943, however, due to the increased frequency of allied air raids, mass production began only in 1944. The first to launch the series was the Me 262A-1a “Zehhud[be” (“Swallow”) fighter. , equipped with four MK 108 cannons with 360 rounds of ammunition located in the forward fuselage. The weight of the total second salvo was 12.8 kg, which was almost two times higher than the same indicator for propeller-driven fighters of those years,

The bomber variant Me 262ÿ-2ÿ "ÿshgtuÿÿ" ("Petrel") was launched next, which had, in addition to two cannons, pylons on which one 1000-kg bomb, two 500-kg or two 250-kg bombs could be hung. -kg. Bombing was carried out from low altitudes and from a dive using a Keui 16V collimator sight and a TSA device, which takes into account altitude, speed and drift angle.

In October 1944, Me 262A-1a fighters were equipped with two squadrons of the newly formed Kottapao Mozuogpu unit, designed to fight British and American bombers. Air defense

NORMAL PLANTS defense of Berlin at the end of the war- No. ai |

We were led by the Kottapao Mekeg night fighter unit, which was armed with B-series vehicles - Me 262V-1a. Tactical reconnaissance subunits "opieggottapao Braspeoo" and MA SG 6 were armed with Me 262A-14/73 and Me 262A-5a modifications. Squadrons equipped with A-series machines were part of KS 6, KS 27, KS 54 and Japan 44.

Aircraft Me 262

Until the end of the war, Messerschmitt worked on projects for numerous variants of the Me 202, including:

- Me 202 S-1a - interceptor with an additional NUK 509A-2 rocket engine in the rear fuselage;

- Me 262S-2b - interceptor with BMX 0036 engines (combination of BM 003 turbojet engine and BM 7 18 rocket engine);

Pre-flight preparation of the aircraft Me 262

The nose of the aircraft Me 262

NORMAL PLANTS

Me 262

- Me262NS - a high-speed fighter with a large sweep wing and two engines recessed into the wing (VMY 003 for Me 262NS I, Ne $ 011 for Me 262NS Pi Lito 004V for Me 202NS Sh);

M2 62

- Me 262 AiyChageg (1, [a and P) - reconnaissance options with ÿito 004C engines;

- Me 262 $supeNBotret (Ma and Sh) - high-speed bomber, the first two were a modification of the previous one

Me 262 plane crash

NORMAL FLIGHT AIRCRAFT versions with bomb suspension under the forward fuselage, the latter had an increased fuselage volume with a bomb bay;

— Me 262 [yupa — with additional ramjet engines.

In total, over 1,400 Me 262 aircraft were produced during the war years. A large number of these aircraft fell into the hands of the Allies as trophies and were subjected to careful study. After the war, for some time, the Czechoslovakian Me 262 with a non-standard cannon KOY army consisted of

armament of the Me 262A-1a and Me 262V-14 aircraft under the designation

Suspension NURS under the wing Me 262

respectively, 5-92 and (5-92. Characteristics of the Me 262A-1a: wingspan - 12.5 m and its area - 21.7 m? aircraft length - 10.6 m , height - 3.85 m, weight Combat unit of empty aircraft - 23795 kg, Me262 take-off weight - 6925 kg, maximum speed - 868 km/h, range - 1050 km, practical ceiling - 11450 m.

Damaged Me 262

Pre-flight preparation of an experimental aircraft Me 202

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NORMAL PLANTS Me 264

At the beginning of 1941, the company received a contract for the construction of six experimental machines of the P1061 project, which were to become prototypes for a four-engine serial long-range aircraft under the designation Me 264 (long-range reconnaissance Me 264A and long-range bomber Me 264B). In total, it was supposed to build 24 copies of the Me 264 for operations in the United States.

The Me 264 was a four-engine all-metal monoplane with a large span wing and a two-fin tail unit. The first experimental vehicle was equipped with ÿito 211]-1 engines, VMU 801 engines were to be installed on production vehicles.

Its variants were developed with turboprop (two or four VMU 028) and turbojet engines.

Me 264 lyami (four ÿito 004ÿ or

two BMX 018). Sealed

glazed cockpit occupied the forward fuselage

Ms., The fuselage housed a bomb bay for 5000 kg of bombs, defense

thread armament with

stood out remotely

guided turrets with

twin MC machine guns

131 or MC 151 guns

(one of the variants of the aircraft Preparing a prototype Had five turrets Y).

Me 264 The first prototype

Me 264 \ 1 took to the air

December 23, 1942 1: After the initial test phase, it was accepted

Aircraft Me 264

Me 264 in flight

130

Y

NORMAL PLANTS The decision was to limit the number of prototypes to three. Flight tests continued until July 18, 1944, when the first

Me 264 in the parking lot

the experimental vehicle was destroyed during an Allied air raid. Two prototypes under construction were also destroyed, the degree of readiness of which was 80%, Characteristics of Me 26473: wingspan - 43.0 m and its area - 127.7 m, aircraft length - 20.115 m. height of 264 cells is 4.3 m, empty weight is 23,360 kg, fuel weight is 19,700 kg, maximum takeoff weight is 56,040 kg, cruising speed is 350 km/h, maximum speed is 545 km/h, landing speed — 160 km/h, rate of climb — 120 m/min, range — 15,000 km, maximum flight duration — 45 h.

Aircraft engine repair Me 264

The interior of the cockpit of the aircraft Me 264

The nose landing gear of the aircraft Me 264

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NORMAL PLANTS Me 328

In July 1941, the Messerschmitt firm began work on the Me P.1079 experimental project, the purpose of which was to create a miniature high-speed aircraft launched from a carrier aircraft. As a propulsion system, it was supposed to use a PUVRD, the development of which was carried out by German engine builders. Such an aircraft could be used both as a day fighter guarding heavy bombers and as a light bomber capable of penetrating a well-defended enemy zone at low altitude. The choice fell on pulsating engines because, compared to turbojet engines, they are structurally simpler due to the absence of a compressor and turbine and, therefore, are much cheaper to manufacture. It was assumed that by the time the development of the mini-aircraft was completed, mass production of pulsating engines would already be launched.

KIM also included OE5 in the preliminary studies related to the determination of the possible appearance of the future mini-aircraft.

Variants Me R 1079

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NORMAL PLANTS

Me328 V-O

At the beginning of 1942, after discussing the results obtained, a variant of the Me R1079/17 project was chosen, which was assigned the designation Me 328 by KIM. Me 328V. As an engine, it was supposed to use the ÿÿ 014 PUVRD with a thrust of up to 300 kgf, the mass production of which was to begin at the end of 1942.

The Az 014 engine was a 3.6 m long pipe, consisting of an inlet device with a valve grid No., a combustion chamber with fuel injectors and spark plugs, and an exhaust pipe. He worked in the following way. When ignited formed in

As a result of the fuel supply to the combustible mixture, a microexplosion occurred, the pressure in the combustion chamber increased, and the valves on the grate closed. The combustion products were ejected through the exhaust pipe into the atmosphere in the form of a jet stream. As a result of fuel mixture burnout, the pressure in the chamber dropped below atmospheric, the valves opened and a new portion of air entered the chamber, a new microexplosion occurred, and the cycle was repeated at a frequency of 60–70

Aircraft Me 328

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® < : ÿ + NORMAL FLIGHT AIRCRAFT NORMAL FLIGHT AIRCRAFT At the end of March 1942, Messerschmitt submitted to the KIM Technical Department proposals for the development of six versions of the aircraft: Me 328A-1 - with two ÿÿ 014 engines and = two MS 151 guns ; Me 328A-2 - with overall dimensions increased in comparison with NiyusA-1, four engines and two MK 103 guns; Me 328A-3 - analgesic with dose

Me 328V-1 - similar to A-1. but capable of carrying under the fuse

NY A-2, BUT fast

carrier aircraft

we lay a bomb weighing up to 1000 kg; Me 328V-2 - similar to A-

› able to carry under the fuse

attacks by enemy fighters, after completing the combat mission, return to their own airfield and land on a retractable ski. As a fighter-bomber, the Me 328 uncoupled from the carrier not far from the enemy zone, penetrated it at low altitude and attacked a ground target or a ship with a bomb, after which it returned to its own airfield. In addition to the options for separate performance of functions, a variant of combined combat use was also considered: first, the Me 328 performs the tasks of a light bomber, then returns to the carrier aircraft, refuels and performs the functions of an escort fighter. Calculations showed that the cost of producing one Me 528 should be four times less than for the production of one Ech 190 or one VKMe) 109 Construction of the first ten experimental machines (from YI to U10)

began a year later (in March 1943) on the

28 on landing ski

similar areas glider

cooperation with RE. First three

134 135

AIRCRAFT OF THE NORMAL SCHEME The fixed wing, the metal fuselage, and the rear part of the fuselage were borrowed from the serial fighter BE 109. hours per plane.

In parallel with the construction of experimental machines, intensive tests were carried out in the Messerschmitt wind tunnel in Augsburg in order to determine the optimal location of the ÿÿ 014 engines (on or under the wing or on the fuselage). When the engines were located on or under the wing, there was a harmful effect | r vibrations on the power elements of the wing and, in addition, the jet jets of the engines fell on the tail unit. The installation of engines on the side of the fuselage in the tail section made it possible to avoid these effects before installation.

Y

STVIY, but, C to the launch position of the other side, there were problems with engine mountings and the effect of vibration on the tail section.

At the end of 1943, in response to A. Hitler's demands to accelerate the development of new types of offensive weapons, it was decided to stop work on the A series and focus all efforts on the development of B series machines. In the autumn of the same year, flight tests began in Hörsching (Austria). the first experimental machine without engines Me 3281, conducted by test pilots Hanna Reitsch and Heinz Kensche. Oo 217 (tail code ÿT+EI) was used as a carrier aircraft, tests were carried out in the altitude range from 3000 m to 6000 m and speeds from 145 km/h to 745 km/h. Non-motorized tests showed that the aircraft had good aerodynamic characteristics, after which in April 1944 an order was placed for the construction of a pre-production batch of Me 328V-0 aircraft at a plant in Thuringia.

Transport E 55

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NORMAL PLANTS

Placement of the X4 missile under the aircraft

The Me 328V-0 was an all-wood construction. Two forward fuel tanks occupied the forward part of the fuselage, two rear tanks were located in the tail part. Between the compartment of the front tanks and the cockpit there was an armored partition 15 mm thick, in addition, an additional armor plate 15 mm thick and a reinforced glass screen 80 mm thick were installed in front of the pilot's seat in the cockpit. The folding part of the cockpit canopy opened up and to the right. To ensure the possibility of an emergency evacuation of the aircraft by the pilot, the tail part of the fuselage was attached to the middle part with the help of explosive bolts. When it was separated, the seat, together with the pilot, seemed to be pulled out of the cockpit, after which the pilot descended by parachute.

The landing gear of the aircraft was a retractable ventral ski, which was also a bomb rack. For this reason, the Me 328V, having taken off from a carrier aircraft with a suspended bomb, could land on a ski only after the bomb was dropped.

The engines were installed under the wing on holders with dampers, the lower surface of the wing at the place where the engines were installed had an asbestos coating. Fuel was supplied to the engines by means of an electric pump, which was fed before starting

Launch X 4 aircraft

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NORMAL PLANTS

battery powered generators. Electric generators during the flight were driven by two windmills located in the wing root (on some experimental machines, windmills were located near the wingtips).

Experimental vehicles with engines took off from the ground using a KI-12 “Maaeape” catapult, a VV V rail rocket launcher or behind a towing aircraft on a drop two-wheeled

a set of starter carts. The engines could drop their altitudes in flight in the event of an emergency situation. At the stage of flight tests and 1-5 = began, the main troubles associated with the harmful effects of vibrations and acoustic loads on

power frame of the aircraft. This caused several accidents, including the loss of two machines due to the destruction of the tail parts,

In the summer of 1944, the Messerschmitt firm, trying to save the program, proposed using the Me 228V in a non-powered version - as a piloted aviation torpedo towed by a Ju 88 (Ji 388 or He 177) aircraft. At that time, the 5th squadron of the 200th bomber squadron (5./KS 200) worked out such a variant of combat use. The Me 328V with a combat charge installed in the nose compartment instead of fuel tanks was supposed to be delivered by a towing vehicle to the area where the enemy ship was located and, after uncoupling in a gliding flight, approach the target. After that, the pilot aimed the aircraft at the target, switching it to pi - piercing, and, having shot the tail section of the fuselage, left the cockpit with a parachute. After splashdown, the pilot was supposed to be picked up by a special rescue team.

In addition to the torpedo aircraft, the company proposed various options for upgrading the Me 328. One of the options involved the development of a C-series machine with an Ito 004V turbojet engine. However, KIM experts rejected it, believing that the Me 228 would lose its main advantage - cheapness in manufacture and operation.

American soldier with captured X 4

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NORMAL SCHEME AIRCRAFT Other variants (fighter with two MC 151 guns launched from a submarine, tactical reconnaissance aircraft capable of reaching speeds of 927 km/h, etc.) did not attract the attention of KIM, Program The Me 328 was discontinued after the decision was made by the Higher Aviation Command to remake a batch of Ei 103 cruise missiles for the KS 200 into the Reichenberg manned projectile (E! 1038). For this reason, not a single Me 328V-0 machine from the ordered pre-production batch was built.

Captured missile engines X 4

Main characteristics:

Variant Me 328A-1 Me 3284-2 Me 328V-1 Me 328V-2 Wing span, m 64 8.5 64 85 Length, m 6.33 863 6.33 863 Height, m 21 21 2.5 25 Wing area, m“ 7.5 12 7.5 120 Flight weight, kg 2200 3800 2700 4730 Fuel weight, kg 290 1520 290 1520 Speed max. km/h 755 920 680 590 Landing speed, km/h 165 145 165 2 Rate of climb at 4000 m, m/s 16 25 — — Range, km 70 1400 630 800 Me ÿ.1095

The project of a light fighter with one Tito 004V turbojet engine under the fuselage and two MK 108 cannons in the nose. It was developed in two versions: the first one with the tail of the Me 262 and a wooden wing, the second with the tail of the Me 328 and a metal wing.

Characteristics: wingspan - 9.74 m and its area - 15.3 m, aircraft length - 9.71 m. height - 2.38 m, fuel supply

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NORMAL PLANTS

VA - 790 l, takeoff weight - 3620 kg, maximum speed at an altitude of 6000 m - 860 km / h.

Me R.1099

The project of a two-seat fighter with two Lito 004S turbojet engines, which was a further development of the Me 262 aircraft, was developed in two versions in March 1944.

P.1099A had a wing and tail from the Me 262A-2a, but the fuselage and landing gear were of a new design, the cockpit

2: \u003d W 5 o 2x o a d \u003d sz o 5 c. = 3: r = = < o

MEP 1099A

MEP 1099B

located in the bow, was developed in two modifications

cations that differed only in weapons:

- R1099AL (in three versions): A - four MK 108 guns, B - two MK 103 guns, C - two MK 108 guns + one MK 103 gun;

- R1099ALE (in two versions): A - one gun MK 108 + one gun MK 112, B - one gun MK 214.

The P1099B did not differ structurally from the previous modification, the changes concerned only the armament - an EPI 151 remotely controlled tail mount with two guns and a twin machine-gun turret in the rear of the cockpit for firing backwards were added.

Characteristics: wingspan - 12.58 m, aircraft length - 12.0 m, maximum speed - 825 km / h.

Me R.1100

The project of a two-seat high-speed bomber based on the basic design of the Me 262 was carried out in two versions.

211001 - in design, it practically did not differ from Me P1099, except that the cockpit was slightly shifted to the left, and up to 2000 kg of bombs were placed in the fuselage. Defensive weapons were not planned.

P1100 / 1 - with a wing of greater sweep, two Ne5 011 turbojet engines were installed at the root of the wing.

Characteristics: wingspan - 12.58 m, aircraft length - 12.0 m, maximum speed - 778 km / h.

MEP 1100

MEP 1100/1

Me R.1101

The project of a single-seat high-altitude fighter participated in the competition for the "emergency" fighter program, was developed in four versions.

The first version of the Me P.1101 /, developed in July 1944, had a double-swept wing along the leading edge and a butterfly-type tail. The Ne$ 011 engine was located under the fuselage, two round air intakes were located along the edges of the cockpit. Two MK 108 guns were installed in the forward fuselage.

Characteristics of Me P1101/1: wingspan - 7.15 m, sweep - 40 "at the wing root and 26 ° at the tips, aircraft length - 6.85 m, height - 2.45 m, fuel weight - 800 kg, take-off weight — 2000 kg, maximum speed — 1050 km/h, rate of climb near the ground — 26.8 m/s, service ceiling © — 12,000 m.

R.1101/1, developed in August, differed from the previous version in a more elongated fuselage and a constant sweep over the entire wing span.

Characteristics Me P.1101 / 11: wing span sweep 40 ° - 8.16 m and its area - 13.5 mg, aircraft length - 9.37 m, height - 3.08 m, fuel weight - 830 kg, take-off weight - 3554 kt,

MeR 1101 aircraft, front view

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NORMAL SCHEME AIRCRAFT maximum speed — 1080 km/h, rate of climb near the ground — 30 m/s, service ceiling — 14,800 m, range — 1,500 km.

P1101/1 (also designated as Me P11011.) differed from previous versions by the installation of a ramjet engine and shorter landing gear. The takeoff was to be carried out with the help of eight P first boosters with a thrust of 1000 kgf each, after which the ramjet engine entered into operation,

R1101/LU, developed in November, was planned as a prototype for flight tests. Since it was supposed to study the influence of the wing sweep angle on the aerodynamic characteristics of the aircraft, the attachment point of the consoles to the center section was designed in such a way that it was easy to set the sweep angle (35°, 40° or 45°) on the ground before the flight. .

Characteristics of Me P.1101/%: wingspan - 8.06 m and its area - 13.6 m °, sweep - [= 359, 40 ° and 45 °, aircraft length - 8.98 m, height 3 5 m, fuel weight - 830 kg, take-off weight - 3205 kg, maximum speed - 860 km/h, rate of climb near the ground -

12 m/s, practical ceiling - 10,000 m.

Preparation for the production of the Me R.1101 began at the company's plant in Oberrammergau in the mountains of Bavaria, in parallel with this, the design documentation was being finalized. Fuselage performed

Trophy MER 1101

Mer 1101 vangar

Mer 1101 with cannon armament

The tail of the aircraft MER 1101

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3 =. ÿ) 5 ons 5 = s. e gay = sh ech o = -< o

NORMAL PLANTS Wu Xia made of duralumin, wings and tails were made of wood. On the experimental machine, instead of the Ne5 011 engine, it was supposed to supply itto 004V. On April 29, 1945, the plant was captured by American troops, by which time the first

American soldier at the captured MEP 1101

experimental machine Me P.1101U1 was built by 80%. After the war, the trophy aircraft was transported to the USA, it was tested at the Bell company, for which it was equipped with the American]-35 turbojet engine. The test results of the Me P.1101 formed the basis of the X-5 aircraft project developed by Bell.

Characteristics of the Me R1101U1: wingspan with a sweep of 40° - 8.25 m and its area - 15.85 m°, aircraft length - 9.18 m, height - 3.71 m, fuel weight - 1250 kg, takeoff weight - 4064 kg, maximum speed - 985 km / h, speed

Mer 1101

Inspection of the guns of the MEP 1101 aircraft Lifting capacity near the ground - 22.2 m / s, practical

tic ceiling - 12,000 m, range - 1,500 km.

Me R.1103

The first version of the air intake of the Me 1101 mini-missile interceptor aircraft

Me R1103L was developed in July

1944 The design of the aircraft is made mainly of wood. The pilot got into the cockpit through the upper hatches and was located in it lying down. An MK 108 cannon was installed under the pilot's bed and a rocket could be suspended; two EsNi-La 513 solid-propellant rocket engines were installed under the fuselage.

Measure 1103/1

The interceptor took off with the help of a drop-off launch cart in tow behind the aircraft by a Bÿ109ÿ or Me 262 towing vehicle. After uncoupling from the towing vehicle, the interceptor pilot started rocket engines, attacked the target and left the combat zone for his base. Then, dropping the front part of the cockpit, the pilot left the plane with a parachute, while the plane parachuted down to the ground to be reused. |

Characteristics of R1103/1: wingspan - 6.2 m, aircraft length - 4.7 m, maximum speed - 810 km/h.

The second version of the MeP1103 / 11 project, developed in September 1944, differed from the previous one in that the pilot in the cockpit

Measure 1103/2

it was not placed sitting, instead of solid-propellant engines, a KI 202 liquid-propellant rocket engine was installed in the tail section.

In an emergency, the pilot left the aircraft with a parachute, having undocked the cockpit, fastened with explosive bolts, from the fuselage.

Characteristics of R1103/P: wingspan - 5.38 m, aircraft length - 5.0 m, maximum speed - 700 km/h.

Me R.1104

The MeP1 104 mini-missile interceptor, like the MeP1105, had a rectangular wing and a single-fin tail. The pilot was seated in the cockpit, one MK 108 cannon was located in the forward part of the fuselage, and the NUK 509A-1 liquid-propellant rocket engine was located in the tail part, landing was carried out on a retractable ventral ski. It was developed in two versions, slightly different from each other. The emergency evacuation of the aircraft was carried out in the same way as in the second version of the Me R.1103.

Characteristics: wingspan - 6.2 m, aircraft length - 4.7 m, maximum speed - 810 km / h.

Me R.1106

Measure 1104/1

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NORMAL PLANTS { e

Measure 1104/2

The project of an aircraft with a turbojet engine Not 011 participated in the competition for the "emergency" fighter program. Two MK 108 guns were installed in the forward fuselage. Three versions of the project were developed:

—P1106/7 had a butterfly-type tail unit, the cockpit was located in front of the empennage;

— P.1106/1 had a T-tail, and the keel was a continuation of the cockpit;

- P1106 LI was like the first option, the nose of the rocket engine instead of the turbojet engine.

Measure 1106/1

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NORMAL PLANTS Characteristics: wingspan - 6.74 m, aircraft length - 7.9 m, height - 3.35 m, maximum speed - 993 km / h.

Me R.1107

Mer 11071

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NORMAL PLANTS

The project of a bomber with four BMX 018 turbojet engines located in the root part of the wing was carried out in two versions:

- R1107LST-shaped tail;

- ÿ1107/1 with a butterfly-type tail and with a common air intake for each pair of engines.

Characteristics: wingspan - 17.37 m, maximum speed - 880 km/h, range - 1000 km, bomb load - 4000 kg.

E

HER"

Mer 11074

Mer1108

A project of a long-range two-seat bomber with a butterfly-type tail. The cockpit was located in the forward part of the fuselage; four Ne$ 011 turbojet engines installed on the trailing edge of the wing were supposed to be the power plant. The aircraft was designed for a bomb load of up to 2500 kg

Characteristics: wingspan - 20.12 m, aircraft length - 18.2 m, maximum speed - 850 km/h, range - 2000 km.

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NORMAL PLANTS

A.

MEP 11081

Me R.1109

A project of a biplane jet aircraft with rotary wings. Wings (upper above the fuselage and lower under the flosel

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AIRCRAFT OF THE NORMAL SCHEME we press) turned in flight, forming the letter "X" in the plan. On the sides of the fuselage in its middle part, two Nez o.

Characteristics: wingspan (in normal position) - 9.4 m, aircraft length - 94 m.

Me R.1110

Mer 1109

The project of a high-altitude single-seat fighter with a He 011 turbojet engine was carried out in three versions. Me P1110 - according to the "duck" scheme. The Me P1110/ differed from the previous version in the conventional tail unit, three MK 108 cannons were installed in the forward fuselage and the possibility of additional installation of two more cannons in the wing root was envisaged.

Characteristics: wingspan with a sweep of 40 ° - 8.25 m, aircraft length - 10.56 m, maximum speed - 1015 km / h.

MeR1110/1 differed from R.1110/1 by an annular air intake inlet from below in the forward fuselage and a butterfly-type tail unit.

Start of an experimental ZUR Epgÿap E4

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NORMAL PLANTS NORMAL PLANTS And on the sides of the fuselage, four guns - in the forward part of the fuselage. The cockpit was equipped with an ejection seat. At the end of April 1945, the allied forces, having captured the plant in Ober

Suspension X 4 under the plane

rammergau, discovered an unfinished full-size wooden

aircraft layout. Characteristics: Wingspan Rocket control panel Sweep 40 ° - 8.74 m, length | x4 in ka ‹

binet of the aircraft on the aircraft - 8.25 m, fuel supply

Mer POL

Me R.1112

The project of one of the variants of a fighter with a Nez 011 turbojet engine and a butterfly-type tail unit was completed in March 1945. The air intakes were located above the wing of the Ta 154

Glider in flight

And \

Me "ÿ2reÿo"

NORMAL PLANTS VA - 1900 l, takeoff weight - 4674 kg, maximum speed - 1100 km/h.

Me "T4ePe" The project of the light fighter Me "MBe|e" ("Dragonfly") with the Ne5 011 turbojet engine located inside the short fuselage and operating

butterfly-type rhenium on a long tail boom. The aircraft had a wing span of 7.0 m and a length of 7.3 m.

3.15. Projects of the company "Skoda-Kauba"

$K R.14

The project of a light fighter with a ramjet engine was developed at the beginning of 1945. The pilot was located lying in the cockpit in the forward fuselage, the fuel tanks were located in the wing and behind the cockpit above the engine. The takeoff was carried out with the help of a resettable launch cart and launch boosters, landing on a retractable ski.

Experienced fighter Me 309-1 In an emergency in flight, the pilot dropped the lantern, after which the bed was ejected forward from the cockpit with compressed air. The project was carried out in two versions, slightly differing from each other, except for the places where the MK 108 gun was installed; in version 5K R.14.01 it was located at the top

5KR 14.02 Heavy towing vehicle He 1112

3.16. Sombold project

So 344

Engineer Heinz Sombold developed a $0,344 mini-missile interceptor project. The NUK 509 liquid-propellant rocket engine with a thrust of 1,500 kgf was used as a propulsion system, installed in the rear fuselage under the cockpit. In the middle part of the fuselage above the wing, small arms were installed - two MS 151 cannons or one MK 108. 50 344 was supposed to be delivered to the combat area by a carrier aircraft, after completing the combat mission, the interceptor landed on the ventral ski. |

50 344, top view

parts of the cockpit and its trunk passed through the glazing, and for $KR14.02, the gun was mounted in the air intake inlet.

Characteristics of $K R.14.01: wingspan - 7.0 m and area - 12.45 m; aircraft length - 9.85 m; height - 4.5 m; altitude of 10,000 m - 998 km / h, service ceiling - 18,288 m, climb time to a height of 14,935 m - 6.3 minutes. Engine dimensions: maximum diameter - 1.5 m and length - 9.5 m.

50 344 detachable warhead

Later, H. Sombold converted his plane into a mini-bomber. The nose part (warhead) with an explosive charge weighing 500 kg became a feature of the design of this aircraft. To improve the accuracy of hitting the target, the warhead had plumage.

Until the end of the war, only aerodynamic tests of models were carried out.

Aircraft characteristics: wingspan - 5.7 m, length - 7.0 m, height - 2.2 m, flight weight - 1350 kg.

3.17. E. Zenger's rocket bomber project

In parallel with W. von Braun, the German scientist E. Senger worked within the framework of the AtenKa project. Its goal was to develop the concept of a hypersonic long-range missile bomber capable of taking off from German territory and delivering

deliver a bomb load weighing several tons to the target. The bomber was supposed to have a trapezoidal wing of small elongation, carrying a fuselage with a spaced tail and a rocket engine in the rear fuselage.

In the forward part of the fuselage, it was supposed to place the pilot's pressurized cockpit, and the view from it was very poor, because instead of glazing, it was supposed to install observation 60-

slits and auxiliary optical devices. Behind the cockpit in the fuselage there were two cylindrical tanks 20.5 long and 1.8 m in diameter, separated by airtight transverse partitions. The baffled compartments were used to store liquid oxygen (front compartments) and synthetic gas oil (middle and rear compartments). In the center section between the tanks there was a cargo compartment that could hold up to 20 tons of bombs. Landing was supposed to be on a manufactured wheeled chassis with a nose support, two main struts and
tail crutch.

The horizontal takeoff of the bomber was to be carried out using a special launch cart, which was a long platform with a rocket engine. At the bottom of the platform there were skids that slid along a rail more than three kilometers long.

E. Zenger calculated various options for the trajectories and flight modes of the bomber, below is one of these options - a bomb attack on New York from the territory of Germany (estimated distance from the launch site - 6500 km, bomb load - 6000).

The launch trolley accelerated the aircraft to a speed of 500 m/s, and 36 s after the launch, at a distance of 12 km from the takeoff site, the rocket engine was turned on. The fuel reserve of 84 tons was produced in 336 s. After that, the speed reached 6370 m / s, and the height - 91 km, the distance from the launch site - 726 km, the flight weight of the aircraft - 16t.

Here the pilot had to take control and carry out further flight in the “wave-like” gliding mode, which consisted of alternating dives into dense layers of the atmosphere with subsequent jumping into rarefied layers. The “wave-like” gliding mode made it possible to achieve a greater flight range compared to conventional steady-state gliding.

At a distance of 5550 km from the start and 950 km from the target (at 1150 from the flight), the speed dropped to 6000 m / s, and the flight altitude decreased

Bomber E. Zenger

E. Zenger while working on the project

Flying boat VU 138

NORMAL PLANTS

RE a e PN - 2

$upweg "Athetika Votfet"

up to 50 km. At this moment, it was planned to drop bombs, after which the aircraft's flight weight was reduced to 10 tons.

After dropping the bombs, the aircraft had to make a U-turn with a radius of 500 km within 330 s and head to the launch site. The speed after exiting the turn reached 3700 m/s, and the altitude - up to 38 km. At a distance of 100 km from the landing airfield, the speed was 200 m/s, and the altitude was 20 km. Subsequent gliding at subsonic speed and landing took place as with a conventional aircraft. The entire flight was supposed to last about 1 hour and 20 minutes.

Senger also considered other trajectories, including flights with a landing on the territory of a country friendly to Germany, as well as with the loss of a car after a bombing. In the latter case, the bombing had to be carried out by diving At an altitude of less than one

kilometers. Then, after the bombing, the pilot had to bring the bomber into climb and have time to eject. It was assumed that after landing at a distance of several kilometers from the place where the bombs fell, the pilot would have to be captured.

Until the end of the war, the concept of 9. Zenger did not have time to be implemented, because it required a huge amount of work to create appropriate starting devices, powerful liquid-propellant rocket engines, to study the problems associated with heating the structural elements of the aircraft and its units during flight with

hypersonic speeds, the development of the bomber project itself, navigation aids, hypersonic bombers.

3.18. Zeppelin projects

7errenp "Eyerepaye Rapggegaisi"

Aircraft 4erreip "Eirepae Rapleggaiÿ" ("Flying Armored Fist") was developed as a portable fighter. The pilot was located in the cockpit lying down, the nose cone was made in the form of a strongly elongated

2erreit "Eyedepae Rapgegudiÿ

"beak", with which the aircraft was coupled with the BE 1098 tug in flight. A single-wheel landing gear under the fuselage was intended for takeoff. The tail unit was of the moth type. On the sides of the fuselage, behind the wheel, there are six solid-propellant rocket engines (three on each side), which were switched on by the pilot after uncoupling from the towing vehicle.

Armament - two K2 65 missiles suspended under the wing. After completing a mission undock pilot

 shaft nose of the cabin and left the aircraft with a parachute. The dismembered plane descended on parachutes, where it was picked up by a special team of three people and delivered by tractor to the launch site for reuse.

Characteristics: wingspan - 4.5 m, aircraft length - 6.0 m, maximum speed - 850 km / h.

Herreip ‹Katteg

The Ierrail Kapiteg (Taran) mini-missile interceptor was designed by the Zeppelin firm in November 1944. It was supposed to be delivered to the attack area by a BE 109 towing aircraft, after uncoupling, attack enemy aircraft with unguided missiles, and in if necessary, use a battering ram.

The aircraft had a rectangular wing and a normal single-fin tail, under the fuselage there was a retractable landing ski. In the tail part of the fuselage there was a Schmidding solid-propellant rocket engine, the operating time of which was about 10 s, the pilot was seated in the cockpit. There was a battery with 14 unguided KAM rockets of 55 mm caliber under the drop nose cone.

The cockpit was armored, and the wing was reinforced so that

2erreip "Katte"

NORMAL PLANTS AIRCRAFT "TAILLESS" . during a ram attack by an enemy aircraft, the interceptor did not receive serious damage. Chapter 4

In an emergency, the pilot could leave the plane with a pair of | with a chute, undocking the cockpit, which was fastened with explosive tailless aircraft bolts, from the fuselage.

Characteristics of the interceptor: wingspan - 4.9 m, aircraft length - 5.1 m, height - 1.2 m, launch weight - 860 kg, maximum speed - 970 km/h.

The emergence of “tailless” aircraft in Germany is directly related to the name of the scientist and aircraft designer Professor Alexander Lippisch, who became interested in such devices even in his youth. He successively went from models to gliders of the Storch series, then from low-power aircraft of the Delta series to the Me 163 rocket fighter and the first projects of the TsR13Zai MR13 supersonic machines.

The developments of A. Lippisch during the war became the impetus for the emergence of numerous tailless projects created by German aircraft manufacturing companies.

4.1. "Arado"

ArI

A project of a twin-engine night fighter and high-speed bomber, made according to the “tailless” scheme with two small vertical keels on the trailing edge of the swept wing. The crew of two people was placed side by side in a pressurized cabin, two BMX 003 turbojet engines were installed from below in the rear of the fuselage and had a common air intake. In

armament consisted of four MK 108 guns in the forward fuselage.

Aircraft characteristics: wingspan - 18.38 m, aircraft length - 12.95 m, maximum speed at an altitude of 6000 m - 800 km / h.

Ag E.581.4

uy? 1

AgE 581.4

TAILLESS AIRCRAFT A project of a single-seat jet fighter with one Nez 011 turbojet engine in the lower part of the fuselage. Two small keels with rudders were installed on the trailing edge of the triangular wing. The armament consisted of two MK 108 cannons. Characteristics: wingspan - 8.0 m, aircraft length - 5.65 m, maximum speed - 854 km / h.

4.2. "Blom and Foss"

VU R.208

The project of a single-seat fighter with an engine in the rear of the fuselage that rotated the pusher propeller. The air intake with the engine cooling radiator was located under the cockpit. The wingtips deflected downwards had elevators and rudders. Armament consisted of three MK 108 guns in the bow.

E x A A. Sa B x 7 a Ze" C 1: H C

VUR 208.02

VUR 208.03

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TAILLESS AIRCRAFT

Three options have been developed:

- P208.01 with the engine ÿito 2228;

— ÿ208.02 with engine 45413, the air intake with the radiator is moved closer to the nose, small vertical surfaces are installed on the tips;

- 2208.03 with OB 602 engine.

Characteristics: wing span with a sweep of 30 ° - 12.08 m and its area - 13 m? aircraft length - 9.2 m, height - 3.46 m, takeoff weight - 5010 kg, empty weight - 4145 kg, maximum speed at an altitude of 10,000 m - 794 km/h, rate of climb near the ground - 1550 m / min, range - 1060 km, practical ceiling - 12,000 m.

VU R.209.01

The project of a single-seat aircraft, which participated in the competition for the "emergency" fighter program. The NeS 011 turbojet engine was installed in the rear part of the fuselage, the cockpit was located above the air intake channel. The main landing gear retracted forward into the lower part of the fuselage, and the front support

VUR 209

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TAILLESS AIRCRAFT ra - back to the forward fuselage with a slight shift to the right (the air intake inlet was slightly shifted to the left). At the tips of the swept wing there were small control surfaces deflected downwards, two MK 108 guns were mounted in the forward part of the fuselage from below.

Characteristics: wingspan with a sweep of 35 ° - 10.65 m, aircraft length - 7.3 m, maximum speed - 900 km / h.

VU R.210

A project of a light fighter that participated in the competition under the Woks]aveg program. In fact, it was a modification of the project VU R208 under the turbojet engine VMY 003A-1, installed in the rear of the fuselage. For take-off, it was supposed to use launch boosters. The main landing gear was retracted with a 90° turn into the fairing under the fuselage, the front support was also retracted with a turn into a niche inside the air intake. Two guns MK 108 or MS 151 were placed in the forward fuselage.

Characteristics: span

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TAILLESS AIRCRAFT with 30° swept wings – 11.52 m, length of the aircraft – 7.34 m.

VU R.212

The project participated in the KIM competition as part of the “emergency” fighter program, the aircraft was another modification of the R210 VU, it was supposed to use the He 011A turbojet engine as an engine. Armament - two guns MK 108, located in the forward fuselage. The possibility of additional installation of two more guns was envisaged.

Characteristics: wing span - 7.5 m and its area - 14 m, length - 7.56 m, height - 2.62 m, empty weight - 2659 kt, takeoff weight - 4079 kg, fuel weight - 1250 kg, speed poppy - maximum at an altitude of 7000 m - 910 km / h, cruising - 770 km / h, take-off distance - 840 m, landing speed - 177 km / h, rate of climb near the ground - 1280 m / min, range - 1125 km, practical ceiling - 12 500 m.

VUR 212 (option)

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TAILLESS AIRCRAFT VU R.215

At the end of January 1944, KIM issued a specification for a night fighter, which was supposed to have four guns, a RiS 240 or Eÿb 244 radar, reach speeds of up to 900 km / h and stay in the air for up to four hours.

When designing the aircraft, the VU R212 project was taken as a basis. Two engines were located in the rear fuselage.

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TAILLESS AIRCRAFT

"Delta" No. 8

For the He 011, additional small vertical control surfaces were installed on the wingtips. The fuel tanks were located in the wing; a fuel preheating system was provided before being fed into the engine.

In the pressurized cabin, the pilot, the radar operator (to the side of the pilot) and the navigator (from behind facing the tail) were placed on ejection seats, who simultaneously performed the functions of a radio operator gunner. It was supposed to be installed in front of the cab

Model IR 12

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TAILLESS AIRCRAFT in the upper part of the fuselage fixed cannon armament, and behind the cockpit - one or two remotely controlled cannons MS 151 on the ENI, 151 turret for shelling the rear hemisphere. It was possible to hang two 5C 250 or 5C 500 bombs under the fuselage, as well as install eight launchers with 56 KAM missiles. The following options for installing cannon and rocket weapons were considered:

— four MK 108 cannons (200 rounds each) and 56 KAM missiles,

- five guns MK 108 (150 rounds each),

- two guns MK 112 (50 rounds each),

- four cannons MS 213 caliber 30 mm (200 rounds each) and 56 KAM missiles,

- six guns MS 213 (160 rounds each).

The design of the aircraft is all-metal, except for the wooden control surfaces and the nose fairing of the fuselage. The latter was associated with the installation of Rab 244 radar and radio equipment.

On March 20, 1945, the VU R215 was accepted as a prototype for developing the design of a future night fighter, but the end of the war interrupted work in this direction.

Aircraft characteristics: wingspan with a sweep of 30 ° - 18.8 m and its area - 63.0 m, aircraft length - 11.6 m, height - 5.0 m, empty weight - 7400 kg, take-off weight - 14 680 kg, capacity fuel tanks - 7800 l, maximum speed at an altitude of 8500 m - 870 km / m, rate of climb near the ground - 10 m / s, service ceiling - 14,800 m, range - 2340 km, flight duration with one engine running at an altitude of 6000 m - 5.2 h, the operating range of the Eb 244 radar is from 0.2 km to 50 km.

VU Ae.607

The project of a fighter, made according to the "tailless" scheme. The engine was assumed to be the He 011 turbojet engine, which was located in the fuselage along the axis of the aircraft. Chassis four-post. The cockpit is shifted to the left relative to the engine. In the forward part of the fuselage there was an additional horizontal tail. Two fuel tanks were located in the right wing console.

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: TAILLESS AIRCRAFT

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WU Ae. 607

TAILLESS AIRCRAFT

Characteristics: wingspan - 8.0 m and its area -

26.0 m, wing sweep - 65 ° at the root and 55 ° at the consoles,

aircraft length - 7.1 m, height - 2.6 m, armament - three guns MK 108.

4.3. "VMU"

VMU/ ‹$gashboter 1"

Project of a bomber with six turbojet engines VMU/003. The location of the engines is two under the fuselage in the nose on the sides of the cockpit and two with a common air intake in each wing console. The horizontal tail unit was absent. Participated in a competition within the framework of the program to create a long-range jet bomber. The crew of two people was housed in a pressurized cabin, in the rear fuselage there was a defensive armament of two MK 108 guns.

Characteristics: wingspan - 26.5 m, aircraft length - 18.5 m, maximum speed - 820 km / h, bomb load - 4000 kg.

44. REZ

OE$ 194

The lack of progress in the development of the He 176 rocket aircraft, on which the Heinkel firm had been working since 1937, forced KIM to start parallel development and connect PE in the face of A to it. Lippisch, taking as a basis the design of his aircraft OE $ 39.

The choice fell on PE 39 is not accidental. By this time, aerodynamic scientists in different countries, including Germany, where professors L. Prandtl, G. Schlichting, A. Busemann, T. Zobel, and others worked, had already studied the flow around the wing - a lump of air at near- and supersonic speeds. In 1935, at an international conference on aviation problems in Rome, it was noted that in order to achieve transonic speeds, it is not

it is necessary to use a swept wing to reduce wave air resistance,
caused by its compressibility.

The swept wing is organically inherent in "tailless" aircraft due to the need to ensure longitudinal balancing and controllability. Therefore, specialists

 of the KIM Technical Department considered that the tailless scheme is the most preferable for the creation of a high-speed aircraft, and A. Lippisch's merits in the field of creating tailless aircraft were undeniable. As part of the secret “Project X”, A. Lippisch and his collaborators had to develop a new aircraft. At the same time, it was assumed that REZ would manufacture the wing, and Heinkel the fuselage and perform the final assembly of the machine, since the PE workshops were adapted only for the construction of gliders. All further studies by A. Lippisch were aimed at solving one problem - to develop the optimal aerodynamic configuration of a high-speed aircraft. In 1937-1938, departing from his traditional “tailless” scheme, A. Lippisch created a small experimental

"Delta" Sh

aircraft - "flying wing" "Delta U". At KIM, this aircraft received the official designation REZ 40.

The air-cooled engine "Argus" with a capacity of 100 liters was used as a power plant. With. pushing screw rotating through an elongated shaft. Just like on the previous machine, the ends with control surfaces were bent down. On the trailing edge of the wing, closer to the tips, there were elevons, a two-seat cockpit with in-line seating occupied the nose of the center section. The chassis was three-post: two front wheel bearings retracted back into the center section, the rear fixed ski at the same time

It served as a fuse for the propeller during landings with high angles of attack.

When creating the PE 40, the goal was to study the advantages and disadvantages of "tailless" in comparison with a pure "flying wing". In case of successful tests, it was supposed to continue work in terms of creating large aircraft - 'flying wings'. During flight tests, the OE $ 40 crashed, and further work in this direction ceased.

Based on the analysis of the results of flight tests of OE$ 39 and PE 40 aircraft, as well as the results of blowing models with different wing configurations, A. Lippisch came to the conclusion that the vertical control surfaces on the wingtips do not work well at high speeds from - due to the influence of the formed end vortices. Therefore, for the future aircraft, it was recommended to place the keel on the fuselage.

Taking this into account, Lippisch began the development of a new aircraft, which received the designation PES 194 at KIM, in the design of which a keel was used in the rear fuselage. Made in

Rocket Hs 293

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AIRCRAFT-"BESHV

OSTKI» e |

Not 162 A

1937-1938 tg. blowing a model aircraft in a large wind tunnel of the AUA Institute gave good results.

In order to eliminate the difficulties associated with the special secrecy regime and to speed up the work, at the end of 1938 KEM handed over Project X to Messerschmitt AG. In the design bureau of the leading plant of the company in He 162 A Augsburg, a special “Department 1” was created, where in early January 1939 A. Lippisch and his employees moved to work.

RE $ 194 was equipped with a K 1-203 rocket engine with a thrust of 300 kgf, which operated on two-component fuel - “T-$ 0 (80% hydrogen peroxide with the addition of a stabilizer) and “7-50 (potassium permanganate solution). To reduce the weight of the aircraft, a ventral landing ski was provided instead of a wheeled landing gear.

The first flights on an OE$ 194 aircraft were performed by test pilot G. Dittmar in August 1940 at the test site of the Rocket Research Center in Peenemünde. The test results were assessed positively by KIM experts, because with such a low-power engine OE$ 194 surpassed its competitor He 176 and reached a speed of 550 km/h. Not 176, which took off for the first time on June 20, 1939, with an engine thrust of 400 kgf, could not

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TAILLESS AIRCRAFT TAILLESS AIRCRAFT exceed the speed limit of 350 km/h. It was decided, based on the design of the Yug 194, to develop the first serial rocket fighter Me 163.

4.5. Horten Brothers

HxSh

The project of a supersonic fighter with a Ne5 011 turbojet engine. When developing this aircraft, the Hortens departed from their traditional “flying wing” scheme and turned to the “tailless” scheme. The aircraft had a swept wing and a keel, in the middle part of which the cockpit was located. Engine

installed under the fuselage. Suspension units for additional rocket boosters were provided, and three MK 213 cannons were installed as armament in the forward fuselage.

According to the idea of R. Horten, the pilot had to be placed in a special capsule filled with water in order to withstand overloads during flights at supersonic speeds. In January 1945, the construction of a prototype aircraft began, which was originally to be tested without an engine. In addition, aerodynamic tests of free-flying models were carried out in Hornberg. The almost completed experimental aircraft was destroyed by the allied forces in the spring of 1945. It should be noted that the work on the creation of a supersonic aircraft for reasons of secrecy at the initial stage had the designation HX.

Characteristics: wingspan with a sweep of 70 ° - 7.2 m and its area - 27.8 m, aircraft length - 7.2 m, height - 2.2 m, maximum speed (with working accelerators) - Aircraft model H XIII in flight 1500 km / h, practical ceiling - 15,000 m.

4.6, "Heinkel"

Not R.1079B/1

A version of an all-weather single-seat fighter with two He 011 turbojet engines in the wing root and four MK 108 cannons in the forward fuselage. The wingtips are bent down.

buy

HeR 1079 VL

Characteristics: wingspan with a sweep of 45 ° - 13.0 m, aircraft length - 9.0 m, maximum speed - 1015 km / h.

Not R.1080

Project of a tailless interceptor aircraft. In the root part of the wing, two ramjet engines "Ogip-Koÿ" were installed. Before

HeP 1080

, the cockpit housed a radar, and on the sides - two MK 108 guns. The take-off was to be carried out from the ground using a drop-down launch cart and four outboard boosters with a thrust of 1000 kgf each, landing - on a retractable ventral ski. Characteristics: wingspan - 8.9 m, aircraft length - 8.15 m, maximum speed - 1000 km / h.

47. Henschel

ÿ$ ÿ.122 Design of a two-seat bomber with a pair of HeS 011 engines located under the swept wing. The cockpit was located in the nose of the aircraft, the bomb load

weighing 1500 kg was located in the cargo compartment in the middle part of the fuselage.

NUR 122

Characteristics: wingspan - 21.32 m, aircraft length - 11.57 m, maximum speed - 1010 km / h.

H $ R.135 Project of a single-seat fighter with the Nez 011 engine, participated in the competition for an "emergency" fighter missile

gram. The engine was located in the fuselage, wingtips

slightly bent upwards. Four MK 108 guns were installed under the air intake inlet.

Characteristics: wingspan - 9.2 m, aircraft length - 7.75 m, maximum speed - 985 km / h.

4.8. Junkers

ÿi EE 128

An aircraft project with a NeS5 011 turbojet engine, which participated in the competition for the “emergency” fighter program. The engine air intakes were located on the sides of the fuselage under the wing. Small vertical keels with rudders were mounted on the outer parts of the swept wooden wing, two MK 108 cannons with 100 rounds of ammunition each were located below in the forward part of the fuselage;

Aircraft model ÿi EE 128

m EP 128

motren the possibility of additional installation of two more guns. The pilot's pressurized cabin had armor 12.7 mm thick at the front and 20 mm at the rear. In addition to the high-altitude fighter, variants of night and all-weather fighters with a longer fuselage and a crew of two were developed. Until the end of the war, the firm built a full-size wooden

aircraft layout.

d Characteristics: wing span with a sweep of 45° - 8.9, its area - 17.6 m, aircraft length - 7.05 m, height - 2.05 m, empty weight - 2607 kg, fuel weight - 1250 kg, takeoff weight 4077 kg, landing speed 186 km/h, maximum speed at 7000 m altitude 990 km/h, ground climb rate 22.9 m/s, service ceiling 13 750 m.

Purge model J and EP 128

ÿÿ ÿ.01

Under this designation, A. Lippisch developed a missile interceptor, heading the "Department 1" at the Messerschmitt company from January 1939. By the end of 1941, several versions of the project had been developed with

numbers from P01-111 to P01-119. ALippish assumed that the final version would receive the serial designation Ts 163, but in the end KIM assigned the designation Me 163 to the aircraft.

1163

R01-111 was developed in November 1939. This variant was created for a turbojet engine, which was supposed to be located in the rear of the fuselage. The engine air intake inlet was located in the forward fuselage. The pilot was seated in the cockpit, the armament consisted of two MS 151 guns in the root of the wing. The take-off of the aircraft was carried out with the help of a resettable launch cart, landing - on a retractable ventral ski and a small tail crutch.

Characteristics: wing span with a sweep of 24 ° - 7.5 m and its area - 19 m? aircraft length - 6.6 m, height - 3.2 m, empty weight - 2200 kg, fuel capacity - 2100 l, takeoff weight - 4270 kg.

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TAILLESS AIRCRAFT

IR 01-111

The R01-115, completed in July 1941, had two engines: the main VMU/002 turbofan engine on top in the tail section with an air intake behind the cockpit, and an additional NK 509 LRE under the turbofan engine. The LRE was used only during takeoff and during the pursuit of an enemy aircraft during an attack. The pilot was seated in the cockpit, the armament consisted of two MC 151 guns in the FORWARD fuselage. Takeoff and landing were carried out similarly to the previous project.

Characteristics: wingspan with a sweep of 270-90 m and its area - 18 m2, aircraft length - 6.75 m, height - 2.87 m.

P01-116 was carried out in three versions. The take-off was provided with the help of a drop-down launch cart and boosters, landing - on the ventral ski.

CR 01-115

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TAILLESS AIRCRAFT

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HP 01-116

The first version, made in April 1939, had a shortened fuselage and a wide trapezoidal wing. As a power plant, it was supposed to use a ramjet in the rear fuselage, the engine inlet was located in the nose. Two guns were installed under the cockpit.

Characteristics: wingspan - 6.0 m, aircraft length - 5.48 m, height - 2.72 m.

The second version, completed in June 1941, was equipped with an LRE in the rear fuselage, had large overall dimensions and a swept wing.

Characteristics: wingspan - 9.0 m, aircraft length - 6.75 m, height - 3.05 m.

The third version, completed in July of the same year, had a ramjet located in the lower part of the fuselage, four guns were installed in the bow from below.

Not 162

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TAILLESS AIRCRAFT 4.

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CR 01-116

Characteristics: wingspan - 9.0 m, aircraft length -

7.06 m; height - 3.05 m. RO1-117, completed in July 1941, had an LRE in the tail

parts of the fuselage, the pilot in the cockpit was lying down. Under the fuselage there was a landing ski, four MS 151 guns were installed in pairs on both sides of the cockpit. It was possible to install two additional machine guns,

Characteristics \ wingspan with a sweep of 35 ° - 9.0 m, aircraft length - 7.65 m, height - 3.26 m.

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PLANES-<"TAILLESS"

IR 01-116

P01-118 completed in August of the same year. An LRE was installed in the tail part of the furia zelyazh, the pilot was seated in the cockpit, two guns MK 108 He 162 or MS 151 were mounted on the sides of the cockpit. , aircraft length - 7.2 m, height - 2.96 m.

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TAILLESS AIRCRAFT

PR 01-117

IR 01-118

II R.04

The project of a bomber with two engines that rotated pusher propellers was developed in 1939 in several versions.

204-106 and RO4-107a had a wingspan of 16.0 m and a length of 5.83 m, but the first was developed under the OB 601E, and the second under the less powerful ÿs 410.

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-To. 5 =. (9) >> no. p CR 01-106

204-114 had somewhat large overall dimensions - E wingspan 16.8 m and length 5.86 m. TO

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PR 04-114 195

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TAILLESS AIRCRAFT II ÿ.08

The project of a multi-purpose aircraft with four engines YuV 615 pushing propellers. By October 1941, the following options had been developed:

a long-range bomber to deliver a bomb load of 20,000 kg to a range of 15,000 km;

maritime patrol aircraft capable of carrying 20,000 kg of radio-controlled glide bombs, mines or torpedoes;

a medium bomber to deliver a bomb load of 50,000 kg to a range of 2,500 km;

long-range reconnaissance aircraft with a range of 27,000 km;

a heavy transport aircraft capable of carrying a 25-ton tank or equivalent payload;

towing a bunch of gliders with a total flight weight of 100,000 kg;

flying anti-aircraft battery with four 88-mm guns.

Characteristics: wingspan - 50.6 m and its area - 300 m? aircraft length - 15.25 m, height - 8.6 m, fuel weight (with additional external fuel tanks) - 40,000 kg, take-off weight - 90,000 kg, maximum speed at an altitude of 8500 m - 645 km / h, maximum range - 27,150 km.

IR 08

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TAILLESS AIRCRAFT II ÿ.09

The single-seat aircraft project was developed in the variant

tah fighter and attack aircraft.

In the variant of the fighter, two turbojet engines were installed in the root of the wing, the armament consisted of four guns in the forward fuselage. A retractable two-wheeled chassis was envisaged.

Characteristics of Sh R09-1: wingspan - 11.6 m, aircraft length - 7.1 m, height - 3.57 m.

In the version of the attack aircraft, an LRE was used as a power plant in the rear fuselage, the wing was straight

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PLANES-"Tailless" my. The fuselage had a compartment for 1000 kg of bomb load, two guns were installed in the bow. The take-off was carried out with the help of a drop-down launch cart; for landing, two retractable ventral skis on the sides of the bomb bay and a small tail wheel were used.

Characteristics of I R09-2: wingspan - 10.0 m, aircraft length - 7.4 m, height - 3.49 m.

HP 09

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TAILLESS AIRCRAFT Chapter R.10

The project was carried out in versions of attack aircraft and high-speed bomber.

YP10-1 - a project of a single-seat attack aircraft with an engine that rotated a pusher propeller behind the keel. There was a bomb bay in the fuselage, two guns were installed on the front sides of the cockpit. The retractable landing gear was tricycle.

PR 10

Characteristics: wingspan - 18.0 m, aircraft length - 9.85 m, height - 5.95 m.

1P10-2 is a project of a two-seat high-speed bomber with two turbojet engines in the wing root. The pilots were seated side by side in the cockpit, the tricycle undercarriage was retractable. In the fuselage, #& there is a compartment for 1000 kg of bombs, two cannons

E.

Flying wing ÿ\ÿ-52 (England)

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TAILLESS AIRCRAFT

relied under the cockpit for firing forward and two machine guns

under the elevator one above the other for firing backwards. Characteristics: wingspan - 13.4 m,
aircraft length -

8.15 m, height - 3.8 m.

11 R.11

The project participated in the competition under the program "1000-1000-1000" in the spring of 1943.

The bomber was made according to the “tailless” scheme traditional for A. Lippisch and was equipped with two ÿito 0048-1 turbojet engines, it was also envisaged to install two launch rocket boosters in the rear fuselage, which reduced the takeoff distance from 998 m to 660 m. In the fuselage there was a compartment in which one $C 1000 bomb could be suspended, the retractable landing gear was a tricycle. The project was carried out in double and single versions.

In the double version, two MK 108 cannons were installed on the sides of the air intakes for firing forward and two MC 151 cannons in the rear fuselage for firing backwards.

In the single-seat version, the pilot's cockpit canopy did not protrude beyond the fuselage contours;

Aircraft model P 11

200

AIRCRAFT-‹"Tailless" horizontal tail. In the normal position, the horizontal tail was folded up along the keel, and in certain modes it was expanded horizontally using a hydraulic drive. Armament consisted of two MC 151 cannons in the rear fuselage. A full-size wooden mock-up was built
aircraft.

Work on I R11 was stopped after the design of the aircraft-‹flying wing» HIX (No 229 in designation KIM) was declared the winner in the competition.

Aircraft model P 11

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TAILLESS AIRCRAFT

IR 11 layout diagram

TAILLESS AIRCRAFT Characteristics of the single-seat variant IR11: wingspan with a sweep of 29° - 12.65 m and its area - 37.3 m? aircraft length - 8.14 m, height - 4.0 m, empty weight - 4005 kg, fuel weight - 1260 kg take-off weight - 7500 kg, maximum speed at an altitude of 10,000 m - 903 km/h, landing speed - 150 km / h, range at a speed of 782 km / h - 2200 km, climb time: 2000 m - 3.17 min, 6000 m - 11.0 min, 10000 m - 25.9 min. In the spring of 1943, due to the aggravation of relations with W. Messerschmitt, A. Lippisch moved to Vienna, where he again headed

YEN

YR 11-121

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TAILLESS AIRCRAFT

IV 11-121

established research institute. There he developed a modernized design of a single-seat 1ÿ.11-121 with a large delta-shaped wing in the variants of a fighter-bom-barrier and a high-altitude fighter. Armament consisted of two MK 103 cannons in the forward fuselage. Fuel tanks were located in the wing consoles.

The first single-keel version had two Joto 004V turbojet engines located in the center section. Jet jets from the engines were shielded from below by the wing, under the fuselage there was a compartment in the form of an influx, in which a 1000-kg bomb was placed.

The second two-keel version was equipped with a ramjet with a flat jet nozzle. The air intake inlets were located in the leading edge of the wing, flowing from the engine

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TAILLESS AIRCRAFT

The gas jet was shielded from below by a wing. Take-off and landing flaps were installed under the wing, and its tips could turn down in flight. The main landing gear, in contrast to the first version, were two-wheeled.

The takeoff of the aircraft was carried out with the help of two solid-propellant launch boosters installed above the wing between the keels. After the ramjet was launched, the boosters were dropped under the action of the engine's jet stream.

At the end of November 1944, the top management decided to produce the aircraft in parallel with the No 229 [1 R11-121 in cooperation with the Henschel firm, but there is no information about the start of the construction of a prototype.

Characteristics of the fighter-bomber: wingspan with a sweep of 45 ° - 10.6 m and its area - 50 m, aircraft length - 6.8 m, height - 2.7 m, fuel weight - 2400 kg, take-off weight - 7260 kg, maximum speed at an altitude of 10,000 m - 900 km / h, range - 3000 km.

11 R.12

The project of a supersonic fighter with a ramjet was developed in several versions. +. Several of the first versions of the swept-wing fighter, completed by the end of 1942, were equipped with liquid-fueled ramjet engines. engine air intake

IR 12 (option) 205

TAILLESS AIRCRAFT

The ski was located below in the forward part of the fuselage; a retractable ventral ski was used as a landing device. Armament consisted of two MK 103 cannons on the sides of the cockpit.

Characteristics: wingspan - 11.0 m and its area - 20 m ', aircraft length - 7.0 m, take-off weight - 7260 kg, maximum speed at an altitude of 5900 m - 1200 km/h, range (with two additional hanging tanks) - 3000 km.

Later versions, the last of which are dated May 1944, were an aircraft with a delta wing with an area of 12 m, tips bent down and frontal air intakes of various shapes. For landing, a retractable ski was installed under the fuselage. As one of the options for the power plant, it was supposed to use a ramjet engine operating on finely dispersed coal dust with a rotating disk-shaped combustion chamber,

Flying wing A\-52 (England)

A\-52 in the parking lot

11 ÿÿÿ

Initially, this number denoted the project of a high-speed bomber with two engines in the nose and tail parts of the fuselage, which rotated the pulling and pushing propellers.
respectively.

Characteristics of a high-speed bomber: wingspan - 12.6 m, aircraft length - 9.4 m, height - 5.1 m.

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TAILLESS AIRCRAFT:

R 13 (original version)

In 1944, this number was assigned to the project of a supersonic aircraft. A series of purges of models M R.13 was performed in the AMA supersonic wind tunnel (Göttingen) at flow velocities corresponding to the numbers M = 1.0 - 2.6.

The supersonic machine was developed in two versions - TsR1Zai Ts R13b.

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TAILLESS AIRCRAFT

IR 13a

IR1Za had a thick delta wing with ailerons and flaps, a large triangular keel with a rudder. The sweep along the leading edge of the wing and keel was 60". The cockpit was located in front of the keel, and the glazing of the canopy did not protrude beyond its dimensions.

The power plant consisted of two engines: the main ramjet and the auxiliary rocket engine, located in the root of the keel above the main engine. It was supposed to replace aviation fuel, which was in short supply at the end of the war, to use finely dispersed coal dust for ramjet engines.
The main engine was located in the center section, its air intake was pushed forward from the fuselage. The exit edges of the FLAT jet nozzle were connected to the control system and could deflect the engine thrust vector up or down by a certain angle. On the sides of the ramjet is located

Not 162 in the parking lot

208

TAILLESS AIRCRAFT

EP 138

There were longitudinal air channels used to cool the outer sections of the wing and displace coal dust from the fuel tanks into the combustion chamber.

After the aircraft was accelerated with the help of a liquid-propellant rocket engine and a certain speed was reached, coal dust was fed into the combustion chamber of the ramjet engine through nozzles. This dust was ignited by passing through a slowly rotating cylindrical igniter grid, the axis of rotation of which was located perpendicular to the flow direction. The rotation of the igniter cylinder protected the grid from the formation of soot on it and, as a consequence, from burning through and its failure.

HP 13v (option)

209

} TAILLESS AIRCRAFT

OM (option) It was believed that a supply of coal dust of 800 kg would be sufficient to ensure the flight of an aircraft for 45 minutes. Rise of the CR! Za had to perform with the help of a resettable star

trolley, landing was supposed to be carried out on a retractable ventral ski.

210

AIRCRAFT - “TAILLESS” Characteristics of Sh R.13a: wingspan - 6.0 m and its area - 20 m, aircraft length - 6.7 m, height - 3.25 m, take-off weight - 2295 kg , maximum speed at an altitude of 5900 m - 1200 km / h, cruising speed - 850 km / h, armament - two MK 103 guns. Landing

Rm (option)

211

} TAILLESS AIRCRAFT

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Rm (option)

was carried out on a retractable ventral ski, for lateral support, wingtips bent downwards were used. Characteristics of R.136: wingspan - 6.9 m, aircraft length - 7.2 m, height - 2.0 m. aircraft at low speeds and actually representing

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TAILLESS AIRCRAFT

"71

Purge model of a supersonic aircraft by A. Lippisch

It is a prototype of the projected I R1Za. To maintain centering, the cockpit was lowered slightly and moved closer to the nose. Instead of an air intake, the OM 1 was equipped with a sharp nose cone, glazed from below to improve the pilot's view. The wing and keel with plywood sheathing had a two-spar wooden structure. The car was equipped with a three-wheeled landing gear that retracted into the wing.

During flight tests, it was supposed to raise OM 1 on a carrier aircraft 51 204 modified for this purpose. The speed of 560 km/h was to be achieved in the dive mode. It was planned to install a rocket engine in the future, which would allow reaching a speed of 800 km/h.

The unfinished car was seized by American troops at the end of the war. After the war, at the request of the American command, the OM 1 was completed by the Germans, after which the device was transported to the USA on a specially converted C-47 aircraft. There he was carefully studied and passed flight tests, and then was transferred to the Smithsonian Institution.

Characteristics of OM 1: wing span with a sweep of 60 ° - 6.0 m and its area - 20 m? apparatus length - 6.325 m, height -

213

4.

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TAILLESS AIRCRAFT 3.25 m, empty weight - 297 kt, takeoff weight - 460 kg, uncoupling height from the carrier aircraft - 8000 m, maximum speed (at

diving) - 560 km/h, landing speed - 72 km/h, descent speed - 6 m/s.

11 R.15 Further development of the Me 163 aircraft with the NeS 011 turbojet engine.

The design used the bow from He 162 and the chassis from BE 109, the air intakes were located in the root part

IR 20

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AIRCRAFT-"TAILLESS" wings on both sides of the cockpit. The armament consisted of two MK 108 guns in the bow and a pair of MS 151 in the wing.

Not 162 Characteristics: wingspan - 10.08 m, aircraft length - 6.4 m, maximum speed - 1000 km / h.

11 R.20

The project of the upgraded version of the Me 163 with the Lao 004C turbojet engine, completed in mid-April 1943

Fuel tanks were located in the fuselage and wing. Armament, in comparison with the Me 163, was strengthened - in the wing two MK 103 cannons with 100 rounds of ammunition and in the forward fuselage of the fuselage two MK 108 cannons with 150 rounds of ammunition.

Characteristics: wing span - 9.3 m and its area - 17.3 m, length - 5.72 m, height - 3.02 m, empty weight - 2419 kg, takeoff weight - 3383 kg, maximum speed at an altitude of 8000 m — 915 km/h, landing speed — 167 km/h, rate of climb near the ground — 22.8 m/s, range — 560 km, service ceiling — 12,300 m, maximum flight time at an altitude of 6,000 m — 42 .6 min, climb time: 2000 m - 1.6 min, 6000 m - 5.8 min, 10,000 m - 14.2 min.

Aircraft engine] HER 101

4.10. "Messerschmitt"

Me 163

The design of a rocket fighter began at the Messerschmitt firm in January 1939 in a special “Department 1”, where A. Lippisch and his employees moved from REZ. The development went under the designation M P01, but when at the end of 1940

Me 163 V

built the first prototype aircraft, W. Messerschmitt made sure that KIM assigned him the designation Me 163%1.

Me 16371 was similar to PE 194, but had a number of improvements. The wing (span decreased from 104 m to 8.85 m) with automatic slats at the ends, swept along the leading edge, changing from 27% at the root to 323 at the tips. Increased keel and rudder, upgraded ki

 control system nematics, cockpit canopy | the pilot was made more streamlined. The He 162, a more powerful LRE VI 203V with a thrust of 750 kgf, was used as a power plant for the 1st installation. The chassis was the same as the E 194, i.e. take-off was carried out on a two-wheeled trolley that was dropped, and landing was carried out on a retractable ventral ski; in the rear fuselage there was a small supporting ski retractable in flight. In the spring of 1941, flight tests of the Me 163\1 without an engine began, this practice was common for the German aviation industry of those years. The prototype aircraft, piloted by G. Dittmar, took off with the help of a towing aircraft and, after uncoupling, made a gliding flight, developing a maximum dive speed. According to the test results of the auto-

tic slats were replaced with profiled slots in the wing toe, which tightened the stall into a tailspin, and landing flaps were installed to reduce the length of the run.

Not 162

The first flight of the Me 16371 with an engine took place on July 13, 1941, in the course of further tests a speed of 885 km/h was reached, but it was not possible to achieve a higher speed during takeoff from the ground due to the small amount of fuel. On October 2, the car, fully fueled, was lifted by a towing aircraft to a height of about 4000 m. After uncoupling from the tug and turning on the engine, G. Dittmar managed to reach a speed of 1004 km/h, which slightly exceeded the calculated one.

In connection with the appearance of more powerful LRE K P-211 with a thrust of 1700 kgf, KIM's interest in the interceptor increased again, it was decided to stop further work on A-series aircraft

American "tailless" XP-79

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TAILLESS AIRCRAFT

= | and start developing Me 163V. Proto

88| the third prototype Me 163U3, assembled in April 1942, became its type. It had a constant swept wing along the leading edge and a span increased to 9.3 m, a longer fuselage with a pointed nose. An obtskator was installed under the fuselage, where the landing ski and a small tail wheel strut were removed. The NU / K 509A-1 LRE with a thrust of 1500 kgf was used as an engine, later it was replaced by the NK 509A-2 with a thrust of 1700 kgf.

The fuel composition for LRE was somewhat different: instead of the component "7-50" they used "C-5:0#% (a mixture of 30% hydrazine hydrate with methanol). The capacity of aircraft tanks was increased, two MK 108 cannons were installed in the root part of the wing (in serial production, a certain number of aircraft were produced with MC 151 cannons) and cockpit armor protection. Flight tests of the Me 163\3 began in August 1942. At the beginning of 1943, a pre-production batch of the Me 163V-0 entered the 16th test team (E.Kao. 16), based in Peenemünde. This team was engaged in the development of tactics for the combat use of rocket fighters and the preparation of years of the NGO composition for them.

It should be said that in the summer of 1943, the Messerschmitt company, due to the massive Allied air strikes on the plants in Regensburg and Augsburg, experienced an acute shortage of production capacities necessary for the manufacture of the Me 262 fighter. Therefore, mass production of the Me 163 was transferred firm "Klemm",

Aircraft Me 163V

Me 163 in flight

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TAILLESS AIRCRAFT, which carried out the final assembly at the plant in the Black Forest from ready-made units and assemblies obtained from small factories and workshops dispersed throughout Germany.

In the summer of 1944, two squadrons of the first group of the 400th fighter squadron (IS 400) began to be equipped with serial Me 1638s, the task of which was to cover important industrial facilities from allied air raids. In December, the second group of two squadrons was formed in the same squadron. The first interception of American B-17 bombers took place on August 16, 1944 and ended in vain. The experience of combat use has shown that the Me 163B is dangerous in operation for flight and ground personnel due to extreme toxicity and

explosiveness of the fuel, and when intercepting it is extremely inefficient. Until the end of the war, only 11 successful attacks were registered.

Characteristics of the E Me 163V "Kote" ("Kometa"): wingspan - 9.32 m and its area - 19.6 m ', aircraft length - 5.7 m, height - 2.74 m, weight empty — 1980 kg, takeoff weight — 4310 kg, maximum speed — 900 km/h, service ceiling — 12,000 m, time to climb 11,000 m — 3 min, flight duration with engine running — from 8 up to 15 minutes, range - up to 100 km, armament - two guns MK 108 or MS 151 plus the possibility of installing on each console one cassette with five unguided rockets of 50 mm caliber, launched vertically upwards according to the signal of photosensitive sensors.

Not 162

Not 162

Not 162, top view

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TAILLESS AIRCRAFT Despite the fact that in the spring of 1943 Lippisch left the Messerschmitt firm, KIM retained | NILO Behind NIM control functions in the Me 163 program. By the end of 1944, three experimental Me 163S were built at the Messerschmitt firm. These machines differed from the B series in a slightly enlarged fuselage, a pressurized cabin with a more streamlined canopy, and a two-chamber NUK 509S-1 rocket engine. However, this project did not go into the series. In the same year, the Me 1630 project was developed. The machine had a new, more elongated fuselage, a three-wheeled retractable landing gear, a teardrop-shaped canopy protruding above the fuselage, increased fuel tank capacities and a two-chamber NUK 509S-1 liquid-propellant rocket engine. The first experimental machine of this series was built in the late spring of 1944 and passed flight tests in a non-engine version. However, KIM, considering that the Messerschmitt company

Not 162 in flight

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TAILLESS AIRCRAFT, due to being busy with other programs, will not have time to bring this project to mass production in time, transferred the Me 1630 project to Junkers.

After some constructive refinement in August 1944, a prototype aircraft was built at the Junkers plant in Dessau, which received the designation ÿu 248U1 in KI.M. The results of flight tests with the NK 509S-1 engine showed that the machine is superior to the Me 163V in all respects. At the end of December 1944, KIM decided to urgently start serial production of the M 248. However, V. Messerschmitt succeeded in changing the designation of the aircraft to Me 263A, arguing that the main technical solutions implemented in it were obtained at the Mes serschmitt". By the end of the war, not a single production Me 263A was built.

The project of the mail plane A. Lippisch

At the end of 1944, a training glider Me 1635 was developed, in which, instead of the T-zui-tank, a second instructor's cockpit was installed. Training flights were carried out in tow, while the remaining tanks were filled with WATER to maintain balance.

Serial production of the Me 163B continued until February 1945, by which time 237 vehicles had been built. In 1944, Japan bought licenses from Germany for the production of the Me 163B and the NK 509A engine, but the first Japanese prototype aircraft, designated]8M1, took off only on July 7, 1945. Before the surrender of Japan, seven prototypes were built.

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TAILLESS AIRCRAFT Me 265

At the end of 1942, Lippisch completed the design of the Me 265 two-seat attack aircraft, which had been started back in 1939. The machine was a tailless aircraft with two OV 603 engines

Aircraft Me 265

Characteristics: wingspan - 17.4 m and its area - 45.0 m?, aircraft length - 10.0 m, height - 3.8 m, empty weight - 6300 kg, takeoff weight - 11,000 kg, maximum speed - 675 km/h

Me 329

Further development of the Me 265 strike aircraft, the project was carried out under the leadership of A. Lippisch. As a power plant, two OV 603 engines were used, which rotated the pusher

Me 265

pushing two push screws. The lower part of the keel protected the propellers from hitting the ground during takeoff and landing. In the fuselage design, parts from the fuselage of the Me 210 aircraft were used. The armament consisted of two MC 151 cannons in the forward fuselage and two 7.9 mm MC 17 machine guns on the sides in the rear of the fuselage. The machine guns were controlled remotely by a gunner-radio operator, who was sitting in the cockpit facing the tail. The fuselage had a bomb bay. The project was not implemented, since the Me 410 project, which was being developed in parallel, was accepted into the series. Me 329 aircraft

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TAILLESS AIRCRAFT

propellers, Armament consisted of five guns MS 151: four

pex in the bow and one in the tail. The aircraft could carry

1000 kg of bomb load in the bomb bay in the middle of the fu

greenery. Built a full-size wooden mock-up. Characteristics: wingspan - 17.5 m,
aircraft length -

7.7 m, maximum speed - 740 km / h.

Me 554

The A. Lippisch project was originally developed for a turbojet engine, then it was redesigned for a piston rv 605 that rotated a pusher screw. To protect the propeller from hitting the ground during takeoff and landing, the vertical tail was installed under the fuselage. The armament consisted of two MC 151 machine guns in the root of the wing. The project has not been implemented.

Me 324

Characteristics: sweep wing span 25.48 - 9.3 m, aircraft length - 7.0 m.

- Me R.1108LI

The long-range bomber project was developed under the leadership of Lippisch. Four Ne5 011 turbojet engines were installed in the root part of the wing with air intakes in the leading edge

wing. The crew of two people was located in a pressurized cabin in the forward part of the fuselage, the cargo compartment was designed for 2500 kg of bomb load. Characteristics: wingspan - 21.7 m, aircraft length - 12.5 m.

Me 264

Me 262

Me R.1111 Me R.1112 The project of a fighter with a NeS 011 turbofan engine was started in January 1945. A tailless version of a fighter with a Ne$ 011 turbofan engine, air intakes. Armament - four MK 108 cannons in the forward part of the cannon - in the forward fuselage.

fuselage. Fuel tanks with a total capacity of 1500 liters were located in the wing.

‹ Measure 1112 Measure 1111 Characteristics: wing span - 9.15 m and its area - Characteristics: wing span with a sweep of 45 ° - 9.16 m, 24 m ', length of the aircraft - 6.6 m, height - 2.6 m, takeoff weight - aircraft length - 8.92 m, maximum speed - 995 km / h. 4674 kg, maximum speed - 1100 km / h.

Chapter 5

The construction of “flying wings” aircraft and the study of their aerodynamic characteristics in the pre-war years were carried out by designers from different countries: A. Zoldenhoff (Switzerland), A. Lippisch and the Horten brothers (Germany), V. Burnelli and D. Northrop (USA), B. Cheranovsky, V. Chizhevsky, P. Bening, A. Senkov, A. Lazarev, I. Kostenko and others (USSR).

Despite the wide variety of non-traditional aircraft models created at that time, only in Germany the development of “flying wings” was brought to mass production. To a large extent, this was facilitated by the agility and perseverance of the aircraft designers, the Horten brothers.
The success of the brothers in mastering the unusual aircraft scheme became the reason that by the end of the war, the leading German aviation firms, which had not previously worked with this scheme, developed several projects of combat aircraft->flying wings for the Luftwaffe within the framework of secret programs.

5.1. "Arado"

Ag E.555-1 Long-range jet bomber project with six

turbojet engines BM 003A, made according to the "flying wing" scheme. The outer parts of the wing were somewhat

With aa IV 74? 1-6

Ag. E 555.1

bent down, vertical keels with rudders were located on top. The glazed sealed re-cabin, which housed a crew of three, protruded forward from the center section, the engines were installed above the center section at its rear. The bomb load was located in the cargo compartment located in the center section. The armament of the aircraft consisted of two MK 108 cannons on the sides of the cockpit for firing forward, a turret with two MC 151 cannons behind the cockpit and a tail remote

but controlled turret with two guns

MS 151 at the rear of the center section for 0b-Me 264 rear hemisphere boom. Work on the project was stopped in December 1944.

Characteristics: wingspan - 21.2 m and its area - 125 m*, height - 5.0 m, takeoff weight - 24,000 kg, maximum speed - 860 km/h, service ceiling - 15,000 m, range (with external fuel tanks) - 4800 km, bomb load - 4000 kg.

Ag E.555-3

Variant of version 555-1 with two turbojet engines ÿÿÿ 018 located above and below the center section in its rear part.

Characteristics: wingspan - 21.2 m and its area - 125 m? aircraft length - 18.4 m, fuel weight - 10,000 kg takeoff

"FLYING WINGS" weight - 25,200 kg, maximum range - 4000 km, bomb load - 4000 kg. , height - 915 km/h,

A

Ag E.555-6

Variant of version 555-3 with elongated wing panels and three VMÿ 018 turbojet engines (one above and two below the center section in its rear part).

Characteristics: wingspan - 284 mi

The nose strut of the Me 264, its area is 160 m?, the length of the aircraft is

12.35 m, height - 3.74 m, fuel weight - 18750 kg; maximum speed - 920 km/h, range (with external fuel tanks) - 7500 km, bomb load -

4000 kg.

Ag E.555-7

Variant of version 555-6 with two engines above the center section and one engine below it.

Characteristics: wingspan - 25.2 m and its area - 160 m? aircraft length - 8.8 m, height - 3.65 m, fuel weight - 15,700 kg, takeoff weight - 41,300 kg, maximum speed - 950 km/h, range - 5000 km, bomb load - 4000 kg.

Main rack Me 264

5.2. "VM\

VMU / "btgashbotzher P"

The bomber project participated in a competition within the framework of the long-range jet bomber development program. It was supposed to install two turbojet engines VMU / 018 with a common air intake. The crew consisted of three people, and the scorer was located lying in the ventral armored

"FLYING WINGS"

2+2=5

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VM "SrpeProtret" I

fairing. In the tail part of the center section there was a remotely controlled navigator installation with Me 264 two guns MK 108.

Characteristics: wingspan - 34.5 m, aircraft length - 18.0 m, maximum speed - 950 km / h, bomb load - 5000 kg.

"FLYING WINGS"

5.3. "Focke-Wulf"

E ‹1000-1000-1000›B

Option B of the EM "1000-1000-1000" strike aircraft project was submitted to the competition under the "1000-1000-1000" program. The power plant consisted of two Nez 011 turbojet engines.

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ana: anor: A. yy

EM • 1000-1000-1000 "V Aircraft characteristics: wingspan - 14.0 m, maxi

light weight - 8100 kg, maximum speed - 1000 km / h, range - 1000 km, bomb load - 1000 kg.

"FLYING WINGS"

5.4. "Gotaer vagonfabrik" ("GOTA")

So R.60

The Co Pb0 project was developed in three versions. The aircraft was equipped with two turbojet engines, which were located one above the other in the rear of the center section. On the wingtips of the machines of options A and B, a pair of small vertical control surfaces were installed above and below; on the machines of option C, vertical surfaces were installed only above the wing.

The armament consisted of four MK 108 cannons in the center section. It also provided suspension units for launch boosters.

Characteristics of the two-seat fighter So P6OA: VMU / 003A engines, wingspan - 13.5 m, its area - 46.7 m,

aircraft length - 10.3 m, takeoff weight - 7450 kg, maximum

SoR 60C

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"FLYING WINGS"

Characteristics of the two-seat fighter SO ROV: Nez 011 engines, wing span - 13.5 m and its area - 54.6 m, aircraft length - 9.9 m, takeoff weight - 10,000 kg, maximum speed at an altitude of 1145 m - 1005 km / h, landing speed - 153 km / h, the pilots were located in the cockpit in
sitting position in tandem.

Characteristics of the three-seater night fighter So P60S: VMU/003A engines, wingspan - 13.5 m, aircraft length - 109 m, height - 3.48 m, the crew was located in the cockpit sitting one after another, a radar was installed in the bow.

5.5. "Heinkel"

Not 6.1078 V

The project participated in the competition for the "emergency" extermination program. The tips bent down were intended for track control. The aircraft had two protruding

Sor 608

the speed at an altitude of 1330 m was 954 km/h, the landing speed was 150 km/h, the pilots sat side by side in the cockpit in a supine position.

234 235

"FLYING WINGS"

9 E

center section nose parts located on both sides of the air

Niche sash H I of the intake (| main main pillar of the rack or assist Me264 DVIGAT se He 011. Chassis Me 264 In the left was the pilot's cabin

ka, right - a niche of the front landing gear, which was retracted into the center section, and two MK 108 guns,

Characteristics: wingspan with a sweep of 40 ° - 9.43 m, aircraft length - 6.04 m, height - 2.6 m, take-off weight - 3870 kg, maximum speed - 1025 km / h, range - 1500 km, practical ceiling - 12 900 m.

Be R.1078S

A variant of the previous project with the Nez 011 turbojet engine in the fuselage, participated in the competition for the "emergency" fighter program. The air intake had a square section, two MK 108 guns were located on both sides of it. The wingtips were bent down. |

Ner 1078C

Characteristics: wingspan with a sweep of 40 ° - 9.0 m, aircraft length - 6.1 m, maximum speed - 1010 km / h.

"FLYING WINGS" Not R.1079V/P

A version of an all-out two-seat fighter with two Ne5 011 turbojet engines in the center section and four MK 108 cannons in the forward fuselage. The crew was located in the cockpit back to back, the wingtips were bent down.

Ner 1079/1

Characteristics: wingspan - 13.12 m, aircraft length - 9.48 m, maximum speed - 1015 km / h.

5.6. Projects of the Horten brothers

WELL

In 1937, the young designers brothers Raymar and Walter Horten, having already some experience in creating flying wing gliders "N Gi N P, made an attempt to create their first aircraft - "flying wing".

During the development of the NP airframe, the brothers developed a good relationship with the chemical company Dynamite AG in Troislorf. The idea arose to use Mipolan and Astrolon composite materials produced by this company in the design of the new aircraft, which, according to the designers, promised to reduce the weight and cost of the aircraft without compromising its strength characteristics. The new aircraft was given the designation H Ua.

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Sarah

n-sha

It was a two-seat car with two Hirt NM 60K engines with a power of 80 hp. With. The engines (one of them was left-handed, the other right-handed) were installed in the wing and pushing screws were rotated through elongated shafts, the gun had to be installed between the screws. A feature of this machine was the lower sweep of the leading edge of the center section compared to the entire wing.
The chassis was non-retractable, tricycle. Two single-seat cockpits that did not protrude from the wing were located side by side, the pilots were placed in them lying on their backs, and the view was provided through the transparent leading edge of the wing.

For the longitudinal balancing of the aircraft in flight, end ailerons (all-turning wingtips) were used. It should be noted that such a technical solution for the first time

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H Ira, side view (center section)

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"FLYING WINGS"

"FLYING WINGS"

used in the design of the tailless aircraft "Pterodactyl-1B", created by D. Hill back in 1929 at the Westland company (England). Balancing tips were also used in the design of the “flying wing glider” KhAI-3, created in the USSR under the leadership of A.A. Lazarev.

"Parabola"

Initially, for the study of composites intended for use in the design of H Ua, the glider "HoG5 deg Te" was built. This glider, which had a wing, the power set of which was made of composite materials based on phenolic resins, was tested in flight in May 1936. After completion of the flight test phase, one wing console

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Parabola, side view

The first one was studied for static strength to failure, the other for half a year - for climatic influences, with special attention paid to adhesive joints.

After testing of the experimental glider was completed in 1937, N Ua was built, the world's first aircraft made of composite materials. It was used for a series of test flights, which showed good controllability. Once, during takeoff, one of the engines failed, the plane hit

Well and

covered the ground and collapsed. After that, it was decided to make the second car out of ordinary materials (steel and wood) to speed up.

The aircraft, which received the designation H Yr, had a wing span increased by 2 m and redesigned cockpits, slightly protruding from the center section, with a seated pilot position. For

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A. 4. P "FLYING WINGS" "FLYING WINGS"

The construction of the aircraft H Ua from composite materials

NU did not issue a contract for the development of a serial machine. Looking for a source of funding to continue their work

uh, tugboat

to improve visibility, the leading edge of the center section was made transparent. The designers abandoned the use of all-turning ends in favor of elevons, installed a central landing flap and steering air brakes associated with the pedals.

The second test vehicle was presented to KIM specialists at the end of 1938 in Berlin. However, KIM did not approve the project and

SaN Ua immotoglider NI

242 243

"FLYING WINGS"

Aircraft N Uv

The Hortens proposed, taking the design of N U as a basis, to develop a glider towing vehicle. However, this idea did not receive official support, after which the N-YB aircraft was legalized.

It was only in August 1941 that Comrade Walter managed to enlist the support of General 9. Udet. N Yr was converted at the Peshke plant in Minden into a single-seat aircraft, which received the designation N Us. This aircraft was intended for use as a night fighter. In May 1942, Comrade Walther flew the finished aircraft from Minden to Göttingen, where they underwent flight tests. In parallel with flight tests in the laboratories of the Institute of Hydroaerodynamics (Göttingen), the aerodynamics of the aircraft was studied on models, however, due to the negative conclusion of scientists, the contract for the construction of a serial aircraft was not issued.

Aircraft N Us

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"FLYING WINGS"

And

Aircraft H Ys (top view)

In the spring of 1943, N Us (tail number RE + NO) had an accident: the pilot mistakenly set the flaps to the landing position on takeoff, the plane touched the roof of the hangar and crashed, but the pilot survived. Work on N U was stopped.

Characteristics N

Variant NUA NUB Nous Tow

Wingspan, m 14 16 16 20

Height, m 21 21 21 —

Length, m 54 675 675 --

Wing area, m 4 38 36 61

Sweep

center section," 2992 No. 2 458 =

Sweep

consoles ° 40 36 38 —

Empty weight, kg 1600 1360 1400 1200

Fuel weight, kg 80 60 80 —

Maximum

weight, kg 1840 1600 1600 2500

Takeoff

speed, km/h 97 82 70 —

Landing

speed, km/h 84 70 70 =>

cruising

speed, km/h 250 230 230 260

Maximum

speed, km/h 280 260 260 29%

Speed

towing, km/h -- = == 220 245

"FLYING WINGS" NUuP

In 1941, the Luftwaffe needed a flying laboratory aircraft for testing A$ 014 PUVRDs. These engines were intended for Ei 103 cruise missiles and Me 328 mini-fighters. (K-3). Captain Walter Horten, a representative of the KIM Inspectorate Department, was appointed commander of K-3, and Senior Lieutenant Raymar Horten was appointed his technical deputy. The headquarters of the K-3 and the design office were located in Göttingen.

NO

The two-seat aircraft, which received the designation H UII, was equipped with two Az 10C engines with a capacity of 240 hp. With. The pilots were located in the cockpit sitting one after another. The center section was made of duralumin, the wing consoles were made of wood. The prototypes of the PUVRD were to be installed between two pusher propellers. The design of the propeller bushings provided for the possibility of their ejection, which was required to ensure the safety of emergency escape by pilots of vehicles with pusher propellers. In addition to engine testing,

"FLYING WINGS" ELOS USE N UP for training pilots in | flying on tailless machines. The landing gear of the aircraft is four-pillar, two front wheels on separate racks retracted back, and the rear wheels forward with a turn of 90°.

The production of the aircraft was organized as follows: the center section was built at the Peshke plant in Minden, and the wing consoles were built in Göttingen. The first machine was fully assembled in 1942, but the AS 014 jet engines did not arrive. This copy of the NUP was tested in May 1944 by Walme 264 by Horten, at the same time it was demonstrated to H. Goering.

Further tests were carried out by test pilots H. Scheidhauer and E. Ziller, and once H. Scheidhauer successfully landed a car in which one of the engines failed. At the end of the war, 20 N UTs machines were under construction at the Peshke plant. Production aircraft were supposed to have the designation No 227 in accordance with the KIM system.

Characteristics: wing span with a sweep of 40 "- 16.0 m and its area 44 m?, aircraft length - 7.5 m, height - 2.5 m, empty weight - 1550 kg, fuel weight - 290 kg, take-off weight - 2000 kg, takeoff speed — 77 km/h, landing speed — 77 km/h, cruising speed — 300 km/h, maximum speed — 350 km/h.

Destroyed Me 262

NUS

The project of a transport aircraft with six ÿÿ 10ÿ engines that rotated pusher propellers.

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"FLYING WINGS"

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"FLYING WINGS"

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NII in the version of a flying wind tunnel

The center section of the NNSh was made of steel pipes, the wing console was made of wood, the chassis was supposed to be four-post. Landing flaps located near the center section, elevons and small plate air brakes on the leading edge of the wingtips were used as controls.

The payload compartment was made in two versions: in the first one, the design of the compartment was intended for the transportation of goods, in the second, the compartment was supposed to represent

NII in the version of a transport aircraft (project 1945)

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"FLYING WINGS"

Scientific Research Institute in the version of a passenger aircraft with coaxial propellers (project 1945)

This is the working part of the wind tunnel, in which it was supposed to test the models of the H XYSH bomber being developed. It was supposed to test an experienced

H ISH passenger version (project 1945)

250

model N USh in November 1945, but it was not completed until the end of the war.

Characteristics: crew of three, wingspan with a sweep of 33.79-40.0 m and its area - 146 m ', aircraft length - 16.5 m, height - 3.85 m, empty weight - 5000 kg, fuel weight — 2760 kg takeoff weight — 8000 kg, takeoff speed — 80 km/h, landing speed — 80 km/h, cruising speed — 250 km/h, maximum speed — 280 km/h, flight range — 6000 km, flight altitude - 1000-2000 m.

Already after the end of the war, by order of the command of the British Air Force, by December 1945, the Hortens developed several variants of the 70-ton aircraft N USh, among which were: a six-engine transport, a six-engine passenger and a four-engine passenger with coaxial propellers. However, none of these projects were implemented.

H IX

At the end of August 1943, an order was issued by G. Goering to build two prototypes of the H IX aircraft, the project of which came out the winner in the competition under the program +1000-

NIўў-2

1000-1000". The deadlines were very tight: the first car (without

engines) had to be prepared by March 1944, the second machine with two VM\/003A turbojet engines - by June 1944. Immediately after receiving the order to build H IX, "team 3" was renamed "team 9" (K-9). The assembly of experimental machines H [XY] and NIKHU2 was carried out on the basis of a repair plant in Gettin

NIH 93 (bottom view, side view)

NIHUS (top view, front)

gene, in addition to this, K-9 had its branches in Hersfeld, Kirtorf, Hornberg, Aegidinberg, Tierstein, Oranienburg and Minden.

The aircraft was made according to the classic "flying wing" scheme. There was no vertical tail, the wing had one main spar and one auxiliary, to which the control surfaces were attached - elevons and flaps.

NIX FROM (layout)

past this, there were steering air brakes (spoilers) on the wing.

Flaps were interconnected with spoilers. The course control was carried out using pairs of spoilers located below and above on each console behind the main spar.

near the ends. Spring-loaded wiring ensured the first complete release of a small spoiler, and then a large one. The thickness of the center section was sufficient to accommodate

a: outside the pilot, engines and landing gear, in the "beaver tail" on the experimental machines there was a braking parachute compartment.

The center section of the aircraft was welded from steel pipes, the wing consoles were made of wood, and the skin was made of plywood 17 mm thick. In serial production, it was planned to replace the plywood sheathing with a combined one (15 mm thick). which consisted of a three-layer composition: two outer layers of plywood 1.5 mm thick and an inner layer 12 mm thick, consisting of a mixture of sawdust and charcoal powder, impregnated with glue. The charcoal was supposed to make the plane "invisible" on the locator screens.

The aircraft landing gear is tricycle, retractable into the fuselage. Each console housed four soft sealed fuel tanks with a capacity of 3000 liters. A suspension under the center section of two bombs of the 5C 1000 type weighing 1000 kg each or a pair of fuel tanks of 1250 liters was provided. The armament of the aircraft was developed in two versions: four MK 108 cannons or two MK 108 cannons and two KV 50/18 cameras.

The first flight of the H 1XU1 machine took place on March 1, 1944 in Göttingen. Approaches for the tug No 45 were carried out by the pilot H. Scheidhauer. Four days later, in the second flight (following the tug He 111), he climbed to an altitude of 4000 m and glided to the airfield. The car demonstrated good handling. However, during landing, the braking parachute did not deploy. The pilot, unable to use the flaps for braking (they were fixed in the neutral position on the first car), was forced to remove the nose wheel. The car, which received damage during the run, stopped at the very end of the runway. After the damage was repaired, the aircraft flew successfully on March 23 and April 20

Experienced aircraft NIH YI (top view)

Yes, and in one of the flights, H. Scheidhauer tested a specially designed high-altitude pressure suit.

By the end of April, it became clear that the VMA engines would not be brought to the required condition for the planned first flight of the second machine. As a result, they decided to install ito 004V engines on the aircraft, which had a slightly larger diameter. The car had to be redone as a matter of urgency. In order to protect the wing from the hot gases of the engines, steel sheets were used, and there was a gap of 10 mm between them and the center section.

Although the aircraft H 1XU2 is still - Preparation of HX U? kvzletu was in the assembly, KIM in co- | In accordance with a special fighter program in July 1944, it issued contracts for the construction of 20 A-series aircraft to the Klemm and Gotha firms. Soon the contract of the company "Klemm" from

Ra 1, due to the workload on the Me 163V aircraft, was transferred to Gota. On October 13, 1944, representatives of Gotha and H. Brunet, who headed

HIXY2 seconded to

company design group

ditch K-9, after inspecting a full-size wooden model

decided to start serial production of the aircraft.

The assembly of serial aircraft, designated No 229, was planned at the Friedrichsrode plant.

"Team 9" finished assembling the second prototype by the end of 1944. For the first time, H ÿÿÿ2, equipped with engines, was flown by Lieutenant Erwin Ziller. This flight took place on December 18, 1944 in Oranienburg. In parallel with the tests of the N IXY2, flight tests of its systems and individual components were carried out: on the N Sh.

NIH U2 aircraft assembly

The fourth flight of H IXY2 took place on February 18, 1945 in bad weather conditions (low cloud cover, limited visibility, wet ground). During the flight, a speed of 795 km / h was reached, but at the 45th minute the right engine failed, and ÿ. Ziller made an emergency landing. Difficulties arose with the control of the aircraft, because the hydraulic pump, which rotated from the right engine, stopped. The pressure in the hydraulic system dropped, the rudder jammed. Having released the landing gear and flaps with the help of an emergency air system, the pilot noticed that the aircraft began to lose altitude sharply due to increased resistance. In order to reach the airfield, he increased the thrust of the running engine, but this led to the deviation of the aircraft from the glide path due to asymmetrical thrust, the pilot manually, making every effort, tried to hold the car. At an altitude of about 400 m, the aircraft began to roll to the right. Touching the ground, the car ran off the runway onto soft ground, rolled over and caught fire, the pilot died. The cause of the engine failure is not known, but sabotage has not been ruled out. The total flight time of this machine was about two hours.

NIÿÿ2

Characteristics H ÿÿÿ1 and ÿ ÿÿÿ2

Option N ÿÿÿÿ N ÿÿÿ-2 Wingspan, m 16 16.8 Wing area, m? 46 52.8 Sweep, ° 22.2 22.2 Empty weight, kg 1900 4844 Fuel weight, kg = 1700 Maximum weight, kg 2000 6876 Takeoff speed, km/h 75 150 Landing speed, km/h 75 130 Cruise speed, km/h == 900 Maximum speed, km/h = 960

Despite the failure with the second experimental machine, the production of the Ho 229 aircraft at Gotha was in full swing. No 229\3 (N IKHUZ) was supposed to become a prototype of a single-seat serial fighter-bomber, machine No 229U6

HIGH2

(ÿ ÿÿÿÿ) - a prototype of a two-seat night fighter and training aircraft.

On April 14, 1945, the advancing units of the 8th Corps of the 3rd US Army captured the factory in Friedrichsrod. It turned out that

HIXY2 before takeoff

But 229\3 was almost finished and prepared for testing, No 229\4 and No 22975 were unfinished, and No 229U6 was in the initial stage of construction. In addition, units for 20 machines were ready. The 9th Armored Division of the US Army found H IXHUI in good condition near Leipzig, but its further fate is unknown. NIHUZ (No 229 \ 3) was later dismantled, transported to the USA and carefully studied by the Americans

NIHO? in flight

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"FLYING WINGS" by aviation specialists. It was later restored and is now in the collection of the Smithsonian Institution.

An analysis of the design features of the H IX aircraft shows that the Hortens developed the world's first "stealth" aircraft designed for covert penetration to the target. They were the first to purposefully apply the concept

NIX-b

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"Opyasvag", the essence of which was to reduce radar and infrared visibility
aircraft.

The reduction of radar visibility H [X] was carried out by choosing the “flying wing” scheme, the location of the engines in the center section, recessed air intakes and skin from radar absorbing materials.

Reducing the IR visibility of H IX was carried out by shielding the jets flowing from the engines with the “beaver tail” of the center section, as well as by using a jet cooling system.

All these techniques almost completely coincide with the technical solutions used thirty years later in the American Stealth technology. Large-scale use of technology "Stealth" was undertaken by the firms "Lockheed" and "Northrop" in 1970-1980 tenge. in the E-117A strike aircraft and the B-2 strategic bomber.

Characteristics No 229U3 Center section NIX YZ, rear view (NIHUZ): wingspan boom

VISIBILITY 22.2" - 16.8 m and its area - 50.8 m°, aircraft length - 7.45 m, height - 2.8 m, empty weight - 4600 kg, 7515 kg, overload weight 9000 kg, maximum speed 945 km/h, cruising speed at 2/3 thrust at 10,000 m altitude 685 km/h,

Center section NIH YZ

Center section NIH YZ, side view t 2

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Mer 1101 Mer R 1101. view from the tail

rate of climb - 22 m / s, service ceiling - 16,000 m, flight range: at a speed of 630 km / h - 1880 km, with drop tanks - 3150 km.

On March 12, 1945, G. Goering, in a speech to the leadership of the Luftwaffe, announced that the Horten brothers had been given a contract to develop a new aircraft corresponding to the new “urgent fighter program”. After receiving the contract, the brothers began work on the further development of the H IXA aircraft, which received the designation H IXB. It differed from the machines of the A series by the location of two ÿito 004ÿ engines under the wing with a large sweep angle of the leading edge and the use of a keel, which was a continuation of the double cabin.

It was assumed that the aircraft would have a maximum speed of 1100 km / h, a flight range of 4000 km. Armament was to consist of four MK 108 guns and 2000 kg bombs. Serial production was planned for 1946.

MEP 1101

HX

On September 8, 1944, KIM issued technical requirements to aircraft manufacturing firms for the development of the “people's fighter” (VoIKўўser). The Hortens, on their own initiative, submitted to the competition a draft aircraft, which received the designation HX.

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"FLYING WINGS"

NH (Yoўesўvet)

won the Heinkel project He 162, work on the HX project was stopped.

Characteristics: wingspan - 14.0 m, aircraft length - 7.2 m, height - 2.3 m.

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"FLYING WINGS" nhi

The project of a light two-seat training aircraft received the designation N KhP. This machine was intended for training pilots to fly the N UP aircraft, the work was carried out on an initiative basis. The aircraft was supposed to be equipped with a 90 hp RKU engine. With. Pilot H. Scheidhauer at the end of 1944 tested a car without an engine in flight.

And

RI

NHI

Characteristics: wingspan swept 29 ° - 160 miego area - 38.5 m? aircraft length - 5.0 m, height - 1.65 m, empty weight - 460 kg, maximum weight - 700 kg, takeoff speed - 75 km/h, landing speed - 75 km/h, cruising speed - 180 km / h, maximum speed - 200 km / h.

Non-traditional NHI aircraft towing

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"FLYING WINGS" N XIII

In 1943, the Horten brothers began work on the creation of a supersonic aircraft. To study the controllability of a swept wing at low speeds, they built a glider H XIIIa.

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"FLYING WINGS"

HX in flight

In the design of this machine, consoles from the H 16 airframe were used, docked to the new center section. The pilot was housed in a gondola located under the wing, with access to it through the rear fairing. This made it easier for the pilot to leave the aircraft in the event of an emergency. The glider was made in Hersfeld in 1943, flight tests were carried out in November-December 1944 by G. Strebel. At the end of the war, the glider N X Shaun was destroyed by the liberated Soviet
prisoners of war.

R Horten with a free-flying model H XIIIa

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Characteristics: wingspan with a sweep of 60° - 12.0 m and its area - 36 m2, aircraft length - 11.0 m, height - 1.5 m, empty weight - 250 kg, take-off weight - 330 kg, take-off speed — 44 km/h, landing speed — 44 km/h, descent speed — 1.1 m/s.

H XUSH

In late 1944, the Hortens began working on a project for a long-range flying wing bomber. From the ten initial versions, the final version of the project was chosen, which was presented on February 25 to the expert commission of the ministry.

fa = NHUSHA

The machine in many ways resembled the H IXA aircraft, but was much larger. As a power plant, it was supposed to use six ITO 004V turbojet engines located in the center section, the engine air intakes were located in the middle edge of the wing. The power frame of the airframe was supposed to be made of steel, and the skin was made of plywood with an intermediate layer of coal powder and a binding adhesive. This was to make the bomber invisible on radar screens.

To achieve the maximum range, the designers abandoned the classic landing gear: the take-off had to be carried out with the help of a resettable launch cart and launch boosters. As weapons, four

NHUSHV

re guns MK 213 - two in the bow of the center section and two, controlled remotely, behind the cockpit. The bombs were to be placed in the center section section.

After considering the Hortenov project, the expert commission recommended installing a large keel on the wing at the rear of the center section, engines in two engine nacelles (three turbojet engines each) under the center section and a three-post retractable landing gear. In fact, the recommendations of the commission were reduced to the transition from the “flying wing” to the “tailless” scheme. A modified version (a "tailless" bomber) under the designation N HUSHA was recommended for construction.

However, R. Horten, dissatisfied with the decision of the commission and trying to save his “proprietary” scheme of a pure “flying wing”, very quickly made improvements to his original design.

NHIIV (proposal of the expert commission)

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"FLYING WINGS"

ect and again submitted it to the commission under the designation H XYSHV.

The essence of the improvements was the installation of two non-retractable landing gear under the center section with four tandem wheels in each. To reduce drag after takeoff, the wheels had to be closed with streamlined flaps. Two He 011 engines were mounted on both sides of the struts. At the same time, the landing gear struts served as engine pylons and keels, which corresponded to the recommendations of the expert commission.

March 12, 1945 The Hortens were given a contract to build the H HUShV bomber, the prototype of which was to be ready by the fall of 1945. The construction of the prototype began in one of the underground factories near Weimar, but was not completed until the end of the war.

Characteristics of HHUSHA: crew - three people, wingspan with a sweep of 24.3 ° - 40.0 m and its area - 150 m, empty weight - 11,000 kg, maximum weight - 32,000 kg, fuel weight - 16,000 kg , maximum speed - 820 km/h, cruising speed - 750 km/h, take-off speed - 192 km/h, landing speed - 156 km/h, flight range - 6000 km, bomb load - 3500 kg .

Mer 1101

5.7. Junkers Ta EE 130

Project of a long-range jet bomber with four BMX 003 engines mounted above the rear of the center section. The whole structure was metal,

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"FLYING WINGS" G | except for the wooden outer sections of the wing. A glazed cockpit for two or three people occupied the entire forward fuselage.

Characteristics: wingspan - 24.0 m, aircraft length - 11.0 m, maximum speed - 990 km/h, bomb load - 3000 kg

Cabin Me 262 (spark)

E ASYMMETRIC AIRCRAFT

Chapter b. Asymmetric and twin-fuselage

6.1. Asymmetric aircraft

VU 141

The design of a three-seat multi-purpose aircraft (reconnaissance, bomber, attack aircraft) began in 1937, the first experimental aircraft took off on February 25, 1938. on the left, on the right was a gondola with a cockpit and small arms. It was assumed that the asymmetric layout would improve the view to the crew,

After tests of five pre-series copies of the VU 141A built on the order of KIM in April 1940, e) by the decision of the Ministry, serial production was postponed. However, the firm continued its work by installing a more powerful VMY 801A engine. by increasing the wingspan, redoing the tail, landing gear and control system. First on

Me 262

 The years of the B series aircraft took place on January 9, 1941. By order of the Ministry, the company built five pre-production aircraft, but in the spring of 1942 the program was closed.

Characteristics of the VU 141A: wingspan - 15.5 m and its area - 41.5 m2, aircraft length - 12.15 m, height - 4.1 m, empty weight - 3170 kg, takeoff weight - 3900 kg, maximum speed at an altitude of 3800 m - 397 km/h, cruising speed - 363 km/h, range - 1123 km, service ceiling - 9000 m, armament - two fixed MC 17 machine guns in front, two MC 15 machine guns of 7.9 mm caliber on a mobile installation at the back and four bombs weighing 50 kg each

Characteristics of the VU 141V: wingspan - 17.45 m and its area - 51 m?, length of the aircraft - 13.95 m, height - 3.6 m, empty weight - 4700 kg height at an altitude of 5000 m - 435 km/h, range - 1888 km, service ceiling - 10,000 m, armament is similar to machines of the A series.

VU R.178

The project of a single-seat asymmetric dive bomber with a Joto 004B engine, located to the right of the fuselage. Behind the cockpit there was a fuel tank, and behind it was a bomb bay for a 5C 500 bomb. There was an air brake in the tail section, the armament consisted of two MS 151 cannons in the forward fuselage. A variant of suspension under the fuselage of one 5C 1000 bomb was envisaged. The wingspan was 12.0 m, the length of the aircraft was 10.8 m.

VUR 178

 VU R179

Project of a single-seat asymmetric fighter-bomber with VMU/801 engine. The cockpit was located in a separate gondola to the right of the fuselage.

VUR 179

The main landing gear retracted towards the wingtips. The armament consisted of two MC 151 guns, located in the lower part of the cabin;

suspension of one bomb 5C 500.

Characteristics: wingspan - 10.39 m, aircraft length - 8.43 m, maximum speed - 600 km / h.

VU R194

The project of an asymmetric aircraft was developed in the variants of a dive bomber, attack aircraft, heavy fighter and reconnaissance aircraft. In the forward part of the main fuselage there was a VMA 801 engine with a tractor propeller and a bomb bay in the middle part. In the right short fuselage, 6.4 m long, there was a cockpit armored with steel sheets and a Yito 004V or VMU / 003A turbojet engine, the air intake of which was located under the cockpit. Fuel tanks were located in the wing. The tricycle landing gear was mounted on the main fuselage, the main landing gear was retracted into the wing, and the tail wheel into the fuselage. Armament - two MK 103 cannons (140 rounds each) and two MS 151 cannons (200 rounds each) on the sides of the cockpit, bomb

VUR 194

The load was taken in the following variants: nine 5C 70 bombs, two $C 250 bombs, one $C 500 bomb, or one 5C 1000 bomb.

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The characteristics are the same for all variants of the aircraft: empty weight - 6500 kt, takeoff weight - 9350 kg, wing area - 36.4 m, aircraft altitude (except version 01-02) - 3.92 m, maximum speed at an altitude of 6900 m - 795 km / h, takeoff speed

VUR 204

speed — 180 km/h, landing speed — 150 km/h, service ceiling — 11,100 m, range — 1,070 km, climb time to a height of 9,000 m — 15 min.

The variants differed in the following characteristics:

- ÿ194.00-110 - wingspan - 16.0 m, aircraft length - 12.75 m, double version, members crew sit back to back;

- V.194.01-02 - wingspan - 15.3 m, aircraft length - 12.1 m, height - 3.7 m, one MK 103 gun was replaced by 55 mm

cannon MK 412;

- ÿ.194.02-01 - wingspan - 15.3 m, aircraft length - 11.8 m;

- ÿ194.03-01 - wingspan - 14.3 m, aircraft length - 11.94 m.

VU R.204

Project of an asymmetric attack aircraft and a dive bomber with a VMY 8010 piston engine in the bow and a VMY 003A turbojet engine under the left wing console. The turbojet engine was supposed to be turned on when separated from the attacking enemy fighters. To balance the & - aircraft, the left console was slightly longer than the right console. The main landing gear retracted into the wing from the fuselage, the tail wheel retracted into the fuselage. The horizontal tail assembly was located in front of the keel. Armament consisted of MC 151 cannons, two in front of the cockpit and two in the wing, and a bomb load in the bomb bay. The possibility of suspension under the fuselage of the VU R.246 “NazeKogi” (“Gradina”) glide bomb was envisaged, and under the wing, two additional MK 103 cannons.

Planning bomb VU 246

ASYMMETRIC AIRCRAFT

Characteristics: wingspan - 14.33 m, aircraft length - 12.6 m, maximum speed - 760 km / h, bomb load options - nine 5C 70 bombs, two 5C 250 bombs, one $ C 500 bomb, one 5C 1000 bomb .

VU 237

An asymmetric aircraft with one VMU/8010 engine, developed as a dive bomber and attack aircraft. The engine, bomb bay and tail unit were located in the left fuselage, the cockpit was located in the right one. Armament: in the dive bomber version - two MC 151 cannons in the forward part of the fuselage, two MC 131 machine guns in the rear and 1000 kg of bomb load, in the attack aircraft version - three MK 103 cannons in the front in the middle part of the wing.

6.2. Twin-body aircraft

Ag E.530

Twin-fuselage single-seat high-speed long-range bomber, equipped with two B 6030 engines. The pressurized cockpit was located in the left fuselage, fuel tanks were located in the right fuselage. One bomb weighing 500 kg was suspended under the central section of the wing.

Ahyo. 530

ASYMMETRIC AIRCRAFT Aircraft characteristics: wingspan - 16.3 m, length - 14.2 m, takeoff weight - 10,400 kg, maximum speed - 723 km/h, range - 1800 km.

Me 1097

In 1942, KIM issued a contract to Messerschmitt for the development of a twin-body aircraft Me 1097 (“GuShipo” - “twins”), which was two serial BE 109 fighters connected by a central wing section and a horizontal tail section. Project developed in the following versions:

Me 109 2-1

- Me 1097-1 (prototype). of two BE 109E-4s with YUV 601E-1 engines and without armament;

- Me 1097-2 "Votreg" from two BE 1096-6 engines with Rv 6054-1 engines, armament - two MK 108 guns, two MK 103 guns and one 5C 500 bomb;

- Me 1097-3 "Tessioger" of two BE 109N-2 with Gato 213E engines, armament - four MK 108 guns, one MK 103 gun and one 5C 500 bomb;

- Me 1097-4 "Votreg" of two BE 109N-2 with Lito 213E engines, armament - 2 MK 108 guns and 2 5C 1000 bombs.

The cockpit was located in the left fuselage, the outer main landing gear retracted outward in the wing console, and the inner main landing gear - inside the central section of the wing.

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ASYMMETRIC AIRCRAFT

The prototype, built in early 1943, was destroyed during an allied bomber raid on the firm's flight test facility. In 1944, after the adoption of the Me 262 jet fighter, the Me 1097 program was terminated.

A similar twin-fuselage aircraft P-82 "Vip Misgapo", consisting of two serial P-51 fighters, was created at the end of the war in the United States by North American.

Characteristics of the Me 1097-1: wingspan - 13.27 m, aircraft length - 9.05 m, height - 2.69 m, empty weight - 6000 kt, takeoff weight - 7280 kg, maximum speed at an altitude of 8000 m - 743 km/h, cruising speed — 570 km/h, service ceiling — 11,700 m.

Me 609

The design of the aircraft, composed of two Me 309s, was developed in the variants of a heavy fighter and a high-speed bomber. The cockpit was located in the left fuselage. The armament in the fighter version consisted of four cannons (two MK 108 and two MK 103) and one 5C 500 bomb or two 5C 250 bombs under the central section of the wing, in the bomber version - from one MK 108 cannon and one $C 1000 bomb each. under each fuselage. Aircraft development stopped in 1944

Me 609

Characteristics: wingspan - 15.75 m, aircraft length - 9.72 m, height - 3.43 m, empty weight - 5247 kg, takeoff weight - 6534 kg, maximum speed - 760 km / h.

PLANES OF THE "DUCK" SCHEME

Chapter 7

H* R.75

The project of a single-seat fighter, made according to the “duck” scheme, was developed in 1942. The PB 610 engine was located in the rear of the fuselage and rotated coaxial pusher propellers. The elevators were located on the front horizontal tail, the keel with the rudder was installed from below in front of the propellers and protected them from hitting the ground during takeoff and landing. Armament consisted of four MK 108 guns in the forward fuselage.

Hsp 75

Characteristics: wingspan - 11.3 m, aircraft length - 12.2 m, maximum speed - 800 km / h.

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DUCK AIRCRAFT DUCK AIRCRAFT P.87

Draft of a canard bomber with an OB 610 engine located in the rear of the fuselage and rotating coaxial pusher propellers. The vertical control surfaces were located at the ends of the wing, the cockpit for a crew of three to four people

with their MEP 1110 ri fuselage under the wing. Four MK 108 guns are mounted on the sides of the cockpit. e 07 1 Characteristics: aircraft length - 9.67 m, maximum

speed - 1000 km / h.

NUR 87

located in the forward fuselage. The air intake of the engine cooling radiator was installed under the fuselage, on top in the middle part of the fuselage there was a remotely controlled machine-gun turret for firing backwards.

Characteristics: aircraft length - 12.15 m, maximum speed - 750 km / h.

Me R.1110

The project of a high-altitude single-seat fighter with a Nez 011 turbojet engine was carried out in three versions, two of which were according to the normal scheme, and one was carried out according to the “duck” scheme.

Mer1110 "Hardly" ("Duck") with front horizontal tail, engine air intakes were located on the sides

A PLANE-SHELLS AIRCRAFT-SHELLS i

Chapter 8

8.1. Manned projectiles

EA RA

A project of a combination of a high-speed carrier aircraft "SchpePBotbegtigareg" and a one-time bomber, developed at the company "Daimler-Benz". prathnaanuo to use this link against the USA.

The carrier aircraft (RA) had a straight wing, which housed four Ne $ 021 turboprop engines.

Under the fuselage, between the landing gear of the carrier aircraft, a bomber (RA P) was suspended with a butterfly tail and two BMX 018 turbojet engines under the swept wing. The bomber did not have a landing gear, up to 30,000 kg of bombs were placed in the bomb bay, the crew of three or four people was placed in a pressurized cabin in the forward fuselage.

It was assumed that after uncoupling from the carrier, the bomber would continue flying on its own. After completing the mission, the bomber lay down on the reverse course and flew

until the fuel runs out. The parachute crew had to leave the vehicle over the sea and be picked up by special Luftwaffe rescue units.

Characteristics of the carrier aircraft: wingspan - 54.0 m, aircraft length - 35.8 m, height - 12.26 m, take-off weight - 120,000 kg; maximum speed - 500 km / h, range - 9000 km.

Bomber characteristics: wingspan - 22.0 m, aircraft length - 30.75 m, maximum speed - 1000 km / h.

OVRA

282 283

PLANES-SHELLS SE R.V

A variant of the previous project with a twin-boom tail of the carrier aircraft (dated from the beginning of 1945). The power plant consisted of six OB 6026 piston engines: four engines rotated the pulling screws, and two, located coaxially with the extreme
engines, pushing propellers.

The design of the bomber was also somewhat changed: a spaced tail unit was installed, and a PBS Ob turbojet engine with a thrust of 12,930 kgf was installed above the fuselage. Two crew members were housed in a pressurized cabin in the forward fuselage.

RV R.S

The project of a high-speed carrier aircraft "Schpe! Rogtbengaeeg", similar to the previous version. It was designed to carry five OV RE projectiles or six OV RE projectiles under the wing.

A weapon system of this type was first developed in the USSR in the 1930s. (aircraft "Link" B.S. Vakhmistrov). TB-1 and TB-5 were used as carrier aircraft, I-4, I-5, I-16, I-7 were used as portable fighters. The first flight of the "Link" 3-1, consisting of TB-1 and two I-4s, took place on December 3, 1931, one of the fighters was piloted by V.P. Chkalov. In November 1935, the Aviamatka made its first flight, consisting of a TB-2 and five fighters (two I-16s, two I-5s, and one I-7). Aircraft of this scheme were used by Soviet aviation in combat conditions during the war.

SE RE

A project of an aircraft-projectile intended for suspension under an aircraft-carrier of the RS RS. Projectile OV RE base

Me 262

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AIRCRAFT PLANTS

RVRE

was based on the Hes 011 turbojet engine installed under the fuselage in the tail section. There was no landing gear; a warhead weighing 2000 kg was located in the forward fuselage.

aiming at the target, the pilot will leave the cockpit, jumping out of steam

chute.

Characteristics of the projectile aircraft: wingspan - 8.5 m, aircraft length - 9.2, height - 3.2 m, maximum speed - 1000 km / h.

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OVRE PLANES

The project of the second version of the projectile, in contrast to the previous project of the VMÿ 018 turbojet engine, was installed above the cockpit, which gave the pilot a chance to make an emergency landing on the fuselage. In the forward fuselage

OVRE

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PLANES-SHELLS placed a combat charge weighing 3000 kg. After pointing at the target of his aircraft, the pilot dropped the hatch located under him, fell out of the cockpit, and then descended by parachute.

Characteristics of the projectile aircraft: wingspan - 9.0 m, length of the aircraft - 12.96 m, height - 3.0 m, maximum speed - 1050 km/h.

ÿÿ 103ÿ

In the last year and a half of the Second World War, the German high command turned to the idea of using manned projectiles against enemy ships and well-defended ground targets. To a large extent, this was a consequence of the low efficiency of the German E 103 cruise missiles.

The plan for the development of the first cruise missiles, which in the German terminology of that time were called “glide bombs” (“Sienrotre”), was adopted by the German Ministry of Aviation (EIM) in March 1942. Three months later, the Fieseler company was awarded a contract for the creation of the H 105 rocket. In December

ÿÿ 1036 (options)

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In 1942, the rocket center in Peenemünde began testing without the Ei 103 engine prototype towed behind the EM 200 aircraft. motoren".

The start of mass production of Ei 103 was planned for September 1943, however, due to the increasing frequency of allied air raids, it was launched only in March of the following year. Most of the capacities were occupied by the production of the Ru 190 aircraft.

The rocket was a cantilever medium wing with a light steel fuselage about 6.5 m long and with a maximum diameter of 0.8 m. m and 7.0 m, a butterfly wing with a span of 4.88 m, a trapezoidal wing with a span of 7.0 m. A PUVRD AS 014 was attached above the rear fuselage, the total length of the rocket was 7.7 m. A warhead weighing 850 kg with fuses was installed in the front part of the fuselage; a fuel tank with a capacity of 600 liters, two cylinders with a compressed

air, an electric accumulator, an autopilot and devices for controlling altitude and flight range, in the tail section there are rudder drives.

The take-off speed of the rocket from the ground launcher was 280–320 km/h, the flight speed was from 565 to 630 km/h (for various modifications), the flight altitude was 800–1000 m, and the range was 250 km.

At the end of 1943, a special unit 155 (\) was formed, which was supposed to be armed with E! 103 ground-based. Combat launch of the first ten missiles

Gÿ 1036 options

ÿÿ 1038 "Reichenberg"

targets in England took place at dawn on June 13, 1944; Not 111 - took place on July 7th.

German propaganda immediately gave the cruise missiles the name “weapon of retaliation” (“Egreÿÿipÿÿugaÿÿ”), or abbreviated as U 1 (“V-1”). However, the experience of the combat use of the U 1 revealed the low effectiveness of this weapon, as evidenced by the following data. Until the end of the war, 10,492 rockets were fired at targets in ENGLAND, of which 3,004 exploded at the start, 232 were destroyed in a collision with barrage balloons, 1,878 were shot down by anti-aircraft artillery, and 1,847 were destroyed by air defense fighters. That is, about 30% of the missiles were lost due to design and technological flaws, and almost 38% due to the fact that the autopilot-controlled missile in cruise mode was a non-maneuverable target that could not even evade a collision with a barrage balloon. Some British fighter pilots even managed to

 to turn over a flying rocket, prying its wingtip with the plane of its aircraft, after which the rocket, having lost stability, went into a tailspin and fell to the ground.

In Re, on the instructions of KIM, a project was developed for the Reichenberg manned projectile based on the Yei 103 cruise missile. In total, four variants of the aircraft were developed: the first three were intended for testing and training of flight personnel, the fourth for combat use. The Reichenberg-[U] was supposed to be delivered to the combat zone under the wing of the He 111 carrier.

"Reichenberg-GU" differed from ÿÿ 103 only by the installation of the cockpit in front of the engine air intake (instead of the compartment with compressed air cylinders) and the presence of ailerons on the wing. The cockpit was equipped with a pilot's seat, an instrument panel with a sight, an altimeter, an attitude indicator, a speed indicator, and a clock. In addition, a gyrocompass and an electric battery with a converter were located in the cockpit. The aircraft was controlled using a conventional handle and pedals. The cockpit canopy opened to the right, the windshield was armored.

The first prototypes of the "Reichenberg-[\" did not have a pilot rescue system. On serial machines, it was supposed to install the simplest emergency escape system, similar to the system used on the OV PE projectile or on the Henschel Hs 132 jet attack aircraft. When the ejection lever was actuated, the lock was released and the bottom hatch was released after which the pilot fell down from the cockpit,

Flight tests of the Reichenberg began in September 1944, the first non-motorized model launched from the He 111 carrier,

Cabin glazing ÿÿ 1038

The input device of the engine of the projectile E 103K

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PLANES-SHELLS lost control due to spontaneous reset of the canopy and crashed. The second prototype was also lost. The third car, piloted by Hanna Reitsch, despite the damage received during the uncoupling from the carrier aircraft, completed the flight successfully. However, the second flight of the same machine ended in an accident due to the loss of sand ballast: the plane crashed, but H. Reitsch survived. t At the end of 1944, the training of instructors for training flight personnel to fly the Reichenberg-ÿU began, and production facilities were prepared near Dannenburg for converting the Gÿ 103 into manned Reichenbergs. However, at the beginning of 1945, the program was suspended. In total, before the surrender of Germany, more than a hundred U 1 were converted into various variants of manned vehicles, but none of them were used in combat.): wing span - 5.7 m, aircraft length - 8.0 m, takeoff weight - 2250 kg, warhead weight - 850 kg, maximum speed - 800 km / h, flight range (when dropped from a height of 2500 m) - 330 km, flight duration - 32 min.

E1103K on cart

8.2. Unmanned aircraft projectiles

"Mistel-1"

It was a combination of an unmanned bomber ÿi 88A-4 and a manned fighter BE 109E-4 mounted on it.

Firm "Junkers" in July 1943 was ordered 15 "Mistelei-1". For the training of the flight crew, the ÿi 88ÿ-4 with a conventional nose was used, but almost all the equipment was removed from the cockpit (training vehicles were designated "Mistel 5-1"). The bow was easily separated with quick-release bolts and replaced with a warhead with a ku

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AIRCRAFT PLANTS

Ju 88A + B; 109E

mulative charge weighing 3800 kg. The fighter was mounted on top of two front rigid struts and one rear spring-loaded strut.

Two variants of the combat use of the bundle were envisaged. According to the first option, takeoff and flight to the target was carried out only with the engines of the lower machine running. The engines of the upper machine were started when approaching the target, after which the pilot transferred the bunch into a gentle dive and unhooked,

The in-flight undocking mechanism was as follows. The pilot of the control plane released the rear pillar, which, leaning back along the bomber's fuselage, pressed the limit switch, which opened the locks of the main pillars. The freed bomber swooped down on the target, and the aircraft went back to the base.

The second option provided for the joint operation of the engines of both aircraft until the moment of undocking, while the engine of the upper aircraft was fed with fuel from the carrier.

In June 1944, a special squadron from [U / KS 101] used the Misteli-1 for the first time during a night attack on allied ships in the Seine Bay.

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RE PLANES-SHELLS "Mistel-2"

It was a bunch of ÿi 886-1 with EM 190A-6 or E 190E-8. In 1944, Seventy-five bombers] 886-1, which were under repair, were converted into Misteli-2. The first sample took off in November of the same year, it was planned to deliver 125 copies,

"Mistel-1"

Mistel-5

It was a modernization of the Mistel-2, which consisted in installing an additional rack 0 Mistel under the fuselage of the lower aircraft in the standard color of the chassis, dropped by the Luftwaffe after takeoff. Gain | landing gear was caused by several Mistelei-2 accidents due to strut failures during takeoff from poorly prepared airfields,

In October 1944, the U group of the bomber squadron KS 101 was transferred to the P group of the bomber squadron KS 200, armed with 60 Mistels.

The German High Command planned to carry out Operation Iron Hammer in March 1945. The essence of the operation, which was developed by Professor Steinmann from KIM back in 1943, was the one-time bombing of power plants in the European part of the Soviet Union in order to paralyze the defense industry. For hitting

"Mistelle" in the parking lot

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PLANE-SHELLS For hydroelectric power plants, special drop-off aircraft mines “50t-tegraPol” were developed, which were supposed to be delivered by the flow of water to hydroelectric turbines and put them out of action. The execution of Operation Iron Hammer required about 100 Mistels.

However, in March, airfields in East Prussia, from where

"Mistelle" in flight

"Mistel-2"

One of the Mistels

Mistels were to take off, according to the scenario of the planned operation, were captured by the advancing Soviet troops. In connection with this circumstance, P / COP 200 received an order to redirect their Mistels to attack bridges on the Oder, Neisse and Vistula rivers. From April to these fighting days

Parking "Mistel" on the edge

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AIRCRAFT PLANTS The VAMI 1-91 bombing squadron KS 30 was connected to the actions, hour - == -. traditionally re-equipped on the Misteli.

A variant of "Mistel-3" was developed, which was intended for reusable use as an ultra-long "hunter". At the same time, the lower plane was piloted by its own crew, equipped with a radar and a gun.

E Destroyed Me 262 on an MS 131 in the rear of the plant

cockpit, two drop fuel tanks with a capacity of 900 liters each were suspended to achieve the maximum range.

a 886-7 + Ta 152N

It was a bunch of ÿi 88ÿ-7 and a Ta 152ÿ fighter. Until the end of the war, about 250 copies were built, up to 50 copies were captured by the allied forces in the Mercerburg area.

EY 190A-8 + Ta 154A

The maximum takeoff weight of the bundle is 15,130 kg, the warhead weight is 2,500 kg.

Oo 217 + VU MSKR

In the autumn of 1944, Blom & Voss completed the project of an aircraft, which consisted of a small control plane, in which the pilot was lying down, and a rocket. Both the control plane and the rocket were equipped with ramjet engines. It was assumed that the entire hitch would be delivered to a given area on an Oo 217 aircraft. At a distance of about 300 km from the target, the pilot of the control aircraft started the engines of his hitch; after separation from the carrier aircraft, the hitch had to continue flying independently. the pilot separated the control aircraft from the missile and returned to the base with a ski landing.

VU MCER

Characteristics: wingspan - 6.0 m and area - 6 mg, aircraft length - 8.0 m, rocket weight - 1200 kg, control aircraft weight - 500 kg, fuel weight - 2300 kg, total takeoff

hitch weight - 4000 kg, range, including delivery by carrier aircraft - 1000 km.

Ag E.377 + Ag 234

The project, developed by Arado in the fall of 1944, provided for the installation of an Ag 234V or Ag 234C bomber on an AgE 377 guided glider projectile. A 2000 kg warhead was placed in the bow of the glider, and the rest of the hull was occupied by a fuel tank. The takeoff was supposed to be carried out with the help of a resettable launch cart. In flight, the fuel from the glider was pumped into the aircraft. After the glider-projectile was separated, it was aimed at the target by the carrier pilot by radio. The control plane after completing the task returned to the base.

Ag. ÿÿ77+41234ÿ

Characteristics: total takeoff weight of the hitch - 20,000 kg, maximum speed - 650 km / h, range - 2000 km.

Ag E.377a + He 162

Similar to the previous project, however, He 162 was to be used as a control aircraft, and the Ag E 377a projectile was equipped with two BMY 003 turbojet engines. In this version, the functions of the carrier aircraft were performed by Ag E.3772 , after you

completing the task, the control aircraft No 162 returned to base.

Ju287+Me262A-1a

Ja 287V-1 + Me 262A-1a

It was supposed to use a converted bomber with a reverse sweep wing Jo 287 as the lower projectile.

Me 2624-1 + Me 262A-2a/02

The upper aircraft was a modified version of the Me 262A-22/02, which had a glazed nose and an additional lying position for the navigator-scorer. The lower plane Me 262A-1 was converted into a sleep plane

row: all weapons and the cockpit were removed from it, and the combat charge and control equipment were placed in the vacated volume.

VERTICAL TAKEOFF AND LANDING AIRCRAFT

Chapter 9

\\ R.1003

In 1938, the Wesserflug company, under the guidance of the designer Simon, began the development of a vertical take-off and landing aircraft (project \/ R.1003). In the autumn it was called OV. 600, rotating - - ; two propellers with a diameter of 4 m, installed on the rotary end parts of the wing. During takeoff, the turning parts of the wing turned the Me 262 propellers up, after installing them in their usual position, the aircraft switched to level flight. After the war, this scheme was implemented in the United States in the design of the U-22 Orgeu aircraft,

Characteristics: wingspan - 11.0 m, aircraft length - 8.3 m, take-off weight - 2000 kt, maximum speed - 650 km/h.

EA 269 In 1943, Mr. Focke, founder of the Focke-Wulf and Focke-Ahgelis firms, creator of helicopters (EA 224, EA 226, etc.) and auto

fats (RA 225 and RA 330), developed the project of the tiltrotor aircraft RA 269. On the wing consoles of the aircraft were located

10 VTOL AIRCRAFT :

YR. 1003

engines OB 601 or OB 605, each of which rotated a pusher screw through a long shaft
large diameter. During takeoff and landing, the shaft turned vertically down, during the fire

AIRCRAFT VERTICAL TAKEOFF AND LANDING AIRCRAFT VERTICAL
TAKEOFF AND LANDING! VERTICAL TAKE-OFF AND LANDING AIRCRAFT

RA 269

umbrella flight shaft folded into a wing against the direction

Vz BU | flight. Long main struts

\ landing gear folded forward into the bow

part of the fuselage, the rear - in the tail section.

Characteristics: wingspan -

Scavenging model 10.0 m, aircraft length - 8.9 m, maxi

EA 269 low speed - 600 km / h.

E "Tuier/shrei"

> Z o o B > < - c _ v _ r o x E o. b. w a) m: r w h h P < o

E "TneBJaioe

In September 1944, at the Focke-Wulf company, the designer H. von Halen designed
vertical take-off and landing aircraft, the so-called EZ "TneBYeee}, Machine,
armed with two MK 103 cannons and two MS 151 cannons in the forward fuselage,
was intended to perform the interception. A feature of this aircraft was a rotating
a three-blade rotor around the fuselage, a ramjet was installed at the end of each blade
designs by Otto Pabst, who worked in the gas-dynamic department of the Focke-Wulf company.
The engine, developed back in 1941, had a diameter of about 0.686 m, a length of 1.715 m and developed thrust
839 kgf. It could operate on non-deficient types of fuel, including coal dust. Innings
fuel into engines was carried out due to centrifugal force,

, 8 AIRCRAFT VERTICAL TAKEOFF AND LANDING AIRCRAFT VERTICAL
TAKEOFF AND LANDING 4

The aircraft on the ground stood vertically on the chassis, consisting of the main central wheel in
aft fuselage and four additional struts with small wheels,
mounted on a cruciform tail. In flight, additional stands
folded back, resembling a tulip bud. The cockpit was in the bow
fuselage, the pilot was located in it lying down, while two guns were mounted in the bow (MK 103
or MS 151).

Takeoff was carried out as follows. The rotor was spun with the help of a starting engine installed inside the fuselage, or with the help of starting Ay 1900 boosters, fixed

And. 5,

Under each of the engines, the blades were set at a certain angle to create lift during takeoff. After reaching the required velocity head, the ramjet was turned on. In level flight, the angle of installation of the blades decreased, and the aircraft was controlled by the tail rudders. Transitional flight modes presented a great difficulty for the pilot, especially during landing, which had to be carried out with the tail forward.

After the war, a similar scheme was implemented in the American experimental aircraft HEU-1 by Convair and HEY-1 by Lockheed.

Characteristics: wingspan (outer rotor diameter) — 11.29 m, aircraft length — 9.14 m, takeoff weight — 2347 kg, maximum speed — 1000 km/h.

Not "Hesre"

The Heres (Osa) VTOL interceptor project with an annular wing around the middle part of the fuselage was developed in 1944. The wing was attached to the fuselage with three pylons. An OV RTI turboprop engine was installed in the rear part of the fuselage. 021 or He$021 with 2000 hp. rotating a six-bladed propeller located inside the wing. Air intake inlet

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Not "Hesre"

Nickname of the engine was in the forward fuselage. The pilot was seated in the cockpit during level flight, so during takeoff and landing he was lying on his back. Two MK 108 guns were mounted on the sides of the cockpit. The three-column chassis was located at the ends of the three-fin tail. BE: 2, 9 The plane took off vertically. In the horizontal plane, additional lift was created by the bent ends of the two pylons. The most difficult stage for the pilot was the landing, when the tail of the aircraft turned DOWN. : - Characteristics: outer diameter of the wing - 6.2 m and its area - 29.7 m? aircraft length - 6.3 m, take-off weight - 2140 kg, maximum speed - 800 km / h.

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Not "Tegsie" P

The VTOL interceptor Ne "erce" P ("Lark") was designed from February 25 to May 8, 1945. It was similar to the previous project, but with two OB 6050 engines, each of which rotated a three-bladed propeller.

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VERTICAL TAKEOFF AND LANDING AIRCRAFT

Not "etsre" P

the chik in level flight in the cockpit was located lying down. Two MK 108 guns were installed on the sides of the cabin.

Specifications: outside diameter | wings - 4.0 m, aircraft length - 9.4 m, take-off weight - 5600 kg, maximum speed - 800 km/h.

Interceptor model Nechegsre "P

gyros

Chapter 10

GA 330

In 1942, for reconnaissance and escort of submarines or surface ships, the Fokke Ahgelis company developed a single-seat gyroplane EA 330 Vashsteige (Wagtail) towed on a cable.

Its design was extremely simple: a longitudinal tube reinforced in the front by a truss with a pilot's seat fixed on it, tail plumage and a small dashboard in front, and a vertical tube with a three-blade main rotor and a parachute. The tail unit, made of pipes and sheathed with fabric, consisted of a stabilizer and a keel with a rudder. The propeller blades had a tubular spar, plywood ribs and nose, and fabric sheathing. The entire power frame of the apparatus was made of Steel,

For takeoff and landing on the deck, quickly removable steel skids were provided. In special cases, for example, when operating the apparatus on land, a wheeled chassis could be installed.

The control of the apparatus was carried out with the help of a handle and pedals, like on an airplane.

On the dashboard there were indicators of speed, the number of revolutions of the propeller and an altimeter.

Me 262, front view

gyros

On the submarine, the autogyro was stored disassembled in two vertical cylindrical containers with an inner diameter of 600 mm: Before the flight, the vehicle was assembled on the launch pad in 7-8 minutes. Before the flight, the pilot manually spun the main rotor with the help of a launch cable. When the required speed was reached, which was the sum of the speed of the submarine and the wind speed, the apparatus took off, unwinding the towing cable from the winch (like a kite).

The winch was provided with a device with which the Me 262 could cut the cable in case of an accident. During the flight, a telephone connection was maintained between the apparatus and the boat. There were three communication points distributed between the pilot, the winch operator and the submarine commander. After the end of the observation, the aircraft pulled up to the starting sites.

If necessary, the device could free itself from the cable during the flight and make a free landing. In case of malfunctions in flight, it was possible to reset the propeller by pressing the emergency lever located above the pilot's head and unhook the cable. After this

EAZZO towed autogyro

Trophy Me 262

gyroplanes The pilot descended together with the aircraft on a parashot, which ensured a safe descent from a minimum height of 40 m.

In total, until the end of the war, 200 copies of the EA 330 were built at the Weserflugzeugbau company near Bremen. The first built autogyro was used on a submarine (PL) in the South Atlantic in mid-1942

Characteristics of EA 330: length - 4.47 m, height - 1.67 m, rotor diameter - 7.3 m, volume occupied by containers in the submarine - 2.0 m2, empty weight - 75 kg, flight - 175 kg, range of flight speeds (ground submarine + wind) - 35-80 km / h. With a towing cable length of 300 m and a flight at a speed of 35 km/h, the gyroplane rose to a height of 100 m, and at a speed of 80 km/h, to 220 m. At the same time, the horizon was viewed at a distance of about 25 and 53 km respectively.

"FLYING SAUCERS"

Chapter 11

The first documented reports of encounters with unknown aircraft of various shapes (disc, plate, triangle, cigar, etc.) appeared in 1942.

On March 25, 1942, the crew commander of an English bomber reported in his post-flight report that his plane had been attacked over German territory by an unknown disk-shaped aircraft. An iridescent yellow-red glow was observed around the disk along its edge. Aimed fire from the defensive weapons of the bomber on the attacking vehicle did not give any results, but after a while the unknown vehicle went up and disappeared from the field of view.

In October of the following year, during one of the massive Allied air raids on targets located on German territory, a group of large shiny disks that had risen from below attacked the bomber formation.

On November 27, 1944, the crew of an American bomber returning from night bombing in the western regions of Germany reported by radio about a glowing orange object moving at a speed of about 800 km/h. However, contrary to the crew's assertions, the operators of the ground tracking stations did not detect the object on the radar screens.

"FLYING SAUCERS"

Reports of luminous flying objects noted the unpredictability of their behavior: an object could pass through the combat formation of bombers at high speed without reacting to SOT, Me 262

or it could just suddenly go out during the flight, dissolving in the night sky. Cro

In addition, cases of failures and failures in the operation of navigation instruments and radio equipment of bombers were recorded when unknown aircraft appeared.

After the war, from the captured German documents, it became known that the mysterious flying objects were observed during the war by German pilots. So, for example, in the area of a secret German base in Norway, a German pilot, who took off on alarm, tried to intercept a horizontally flying cigar-shaped apparatus. The apparatus did not have a wing, but there were some devices that resembled antennas sticking out in different directions. The interception attempt ended in failure, because the unknown device quickly went into climb and disappeared.

one flying cigar-shaped apparatus was unsuccessfully fired upon during the war in the Baltic Sea by a German submarine.

The reports of the ALLIED aviation pilots, who observed the unknown devices, did not go unnoticed: the command ordered the intelligence services to conduct a thorough investigation into this matter. One of the first results of the work of intelligence was the emergence of the now widely known abbreviation PRO ("ipÿyeliÿÿbea Puÿpr

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obÿesi" or "ipkpoÿp Yute obesi") - "an unidentified (or unknown) flying object" (UFO). As a result, the investigation ended with the immediate creation in the United States and Great Britain of special research groups engaged in the study of UFOs, and all information in any way related to these issues was classified.

With the end of the war, UFOs did not disappear, but continued to appear from time to time.
These continued appearances, 1 as well as leaks- | The published information about the conclusions of Anglo-American research groups regarding the non-involvement in UFOs of either the Kluftwaffe or the Allied Air Force became the reason for the emergence in 1947 of a new branch of human knowledge - ufology. The wave of enthusiasm for the search for UFOs of alien origin was growing. But quite unexpectedly for ufologists, on March 25, 1950, an article was published in the Italian newspaper P Cioronae 4'ana, in which the famous Italian scientist Giuseppe Belluzzo opened the veil on the mystery of the origin of UFOs,

D. Belluzzo, born in Verona in 1876, was a major specialist in the field of engine building.
He built the first Italian steam turbine, later improved by him for installation on cruisers and battleships. In addition to scientific activities, D. Belluzzo was also involved in politics: under the fascist government in Italy, he was elected to parliament, and for three years he even served as minister of economy.
According to him, the luminous UFOs observed during the war were only -only invented by him disc aircraft, the so-called Belluzzo discs. These devices have been developed in the strictest secrecy since 1942 in Italy and Germany. As proof of his correctness, D. Belluzzo presented draft sketches of some variants of his developments during the war years.

These were unmanned disk vehicles with jet engines on the edges. They were intended for strikes against distant ground targets (similar to long-range artillery

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Disk D, Belluzzo

tilleria) and the fight against allied bombers (analogous to anti-aircraft artillery). In both cases, in the center of the disk

located a compartment with a warhead, equipment and fuel

tank, ramjet engines were used as engines.

The disc was launched from a ground launcher as follows. The disk was spun around its axis either with the help of a special starting device, or with the help of resettable starting accelerators, after reaching a certain number of revolutions, the main PVRI were switched on. The resulting lift force was created both due to the downward thrust of the engines and due to the additional lift force that arose when the engines sucked the boundary layer from the upper surface of the disk.

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"FLYING SAUCERS"

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Drives D, Belluzzo

"FLYING SAUCERS"

Jet jets from the engines of a disk rotating in flight created the illusion of flashing lights quickly running along the edge of the disk. Fuel in flight was supplied to the engines from the fuel tank by gravity due to centrifugal forces. In the first variant of combat use, after running out of fuel, the disk fell to the ground and exploded. In the second, when approaching the formation of bombers, a remote fuse was triggered. According to D. Belluzzo, the Germans intended by 1950 to create a similar disk with a diameter of 10 m, capable of carrying an atomic bomb.

The military reacted immediately after the publication of D. Belluzzo's statement: a refutation of one of the generals of the Italian Air Force appeared in the press. However, this refutation was followed up by an article in one of the Italian newspapers by a certain Lino Scalioni, in which the author claimed that D. Belluzzo's statement was true. During the war, L. Scalione, as part of one of the British special forces, was preparing to transfer samples of secret German weapons to northeastern Norway, where, according to him, the Germans were secretly working on disks.

Some time later, a statement by the German scientist and designer Rudolf Schriever flashed through the Western European press. In it, he also claimed that secret weapons in the form of “flying discs” were being developed in Germany during the war. or "flying saucers", and he was the creator of some of these devices.

In 1950, a part of the CIA archives concerning UFOs was declassified in the United States. It followed from them that most of the flying objects recorded after the war were trophy samples studied or the further development of German developments of the war years, i.e. was the work of human hands. However, these archival data were available only to a very limited circle of people and did not receive wide publicity.

It must be said that the idea of building an aircraft in the form of a disk arose at the beginning of the 20th century. Known aircraft

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"FLYING SAUCERS"

with a disk wing designed by the Russian inventor AG Ufimtsev, the so-called spheroplan, built in 1909 Airplanes with a round wing in plan were called “discoplanes”, They have some advantages compared to aircraft with a conventional wing shape when flying with high angles of attack and have good anti-spin characteristics.

Before the start of World War II in the United States, aircraft design

pa rum Ch. Zimmerman 3b. The development of the He 162 experimental apparatus was started, which was unofficially called "Euipo zauseg" ("Flying Saucer") or "Euipo Nar]ask" ("Flying Pancake"). The prototype of this device with the designation U-173 made more than 100 flights. Based on the test results, the command of the US Navy in 1942 decided to build two experimental disk planes under the designation XE5O-1. XE50-1 was equipped with two engines with a capacity of 1600 hp each. with .. rotating two pulling screws, small control surfaces were located at the rear of the apparatus. The estimated maximum speed was 684 km / h, but Ch. Zimmerman planned to further increase it to 885 km / h by installing more powerful engines. By the time both XE50-1s were ready, the war was over and the Navy lost interest in the "flying saucer" and the disk planes were later scrapped.

During the war years in several secret German centers (in Stetzin, Dortmund, Essen, Peenemünde, Prague, Breslau, etc.) more than 100 models of unusually shaped aircraft were developed, the best specialists of Germany worked on their creation, including: Schumann , Schauberger, Habermol, Mite, Schriver, the Italian Belluzzo and others.

I must say that all work on | | creation of German- | whom “wonder weapons” were carried out under the auspices of the SS, # they were engaged in the Technical

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“FLYING AUSTRUCTORS” was the head of the SS (55-E-TY), and the development leaders had high SS ranks. So, for example, the rocket designer V. von Braun in 1940 received the title of SS Sturmbannfuehrer. To carry out work within the framework of these secret developments, prisoners from the Nordhausen, Buchenwald, Dernau, Mauthausen and other concentration camps were involved in the number of several tens of thousands of people. One of the reasons for the paucity of information about these developments was that all prisoners were destroyed after the work was completed. Evidence of this is the confession in August 1958 of one of the authors of the “flying saucers” Viktor Schauberger: “The model tested in February 1945 was built in cooperation with first-class engineers from among the prisoners of the Mauthausen concentration camp. Then they were taken to the camp, for them it was the end.

However, some prisoners were lucky - they miraculously escaped death. A few years ago, some FBI documents concerning German developments of "flying saucers" were declassified in the United States. In one of the reports of a secret agent of the FBI to his superiors, he spoke of his contact with a man who in |2 1952 moved from Europe to the USA for permanent residence. This man from 1942 to 1945. was a prisoner of one of the concentration camps located on the territory of Poland. the device slowly rose to a height of up to 15 m and just as slowly moved horizontally until it disappeared behind the trees. When lifting and during movement, a howling sound was heard from the apparatus.

Another reason for the lack of more or less reliable data on UFOs was the destruction at the very end of the war of secret German equipment and related documentation by special SS teams that carried out orders from the top leadership.

The whole variety of developed devices can be conditionally divided into four main types: disk planes (with piston or jet engines), disk helicopters,

vertical take-off and landing, surface-to-ground and surface-to-air missile disks (“Belluzzo disks”).

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|

"FLYING SAUCERS"

The "Belluzzo disks", which were based on the design described above, were developed according to the secret programs "Eeeegra!" and "Kire! 2". One of the varieties of disks, designed to fight the armada of allied bombers, had blades along the edges and resembled a disk cutter. The purpose of this disk was to crash into a 60º bomber formation and, spinning, shred everything that came across the path. In a collision of a disk with a bomber, the probability of losing at least one blade by the disk itself was very high. This led to a shift in the center of gravity of the disk relative to the axis of rotation, and the disk began to be thrown in the most unexpected direction, which caused panic in the combat formation of the aircraft.

Some versions of the disks were equipped with a system for creating electromagnetic interference for the radio and navigation equipment of allied bombers. The operating principle of the system was based on a phenomenon known from physics textbooks — a rotating electric charge creates a magnetic field around itself, the strength of which depends on the magnitude of the charge, speed and radius of its rotation.

The second type of disk vehicles, the diskoplane, carried out takeoff, flight and landing like a conventional aircraft; for this, there was a wheeled retractable landing gear.

In June 1939, at the German Free-flying Model Aircraft Championship, an A5 1 diskoplane designed by Arthur Zak was demonstrated in flight. After the end of the championship, General E. Udet recommended the designer to continue work in this direction, after which A. Zak developed four more flying models of diskoplanes. The last of these models

45-5

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"FLYING SAUCERS"

A $ 5, had a wingspan of 1.5 m and a length of 1.25 m. The next of

The designs he developed became a manned full-time

Dimensional discoplane A $ 6.

Diskoplan AS b was built in early 1944 in the workshops of Brandis Air Base. It was an aircraft with a round wing and a conventional tail mounted on the trailing edge. At the front was the Argus ÿÿ 10ÿ-3 engine with a capacity of 240 hp. with., rotation of the pulling screw, ailerons were located at the rear of the apparatus along the edges, and a take-off and landing shield in the middle of the fuselage. The landing gear was three-post: two main fixed wheel racks and a rear crutch. The design of the diskoplane was made entirely of wood, and the cockpit canopy, the pilot's seat and the main landing gear were taken from the BE109B aircraft.

Discoplane tests were carried out in 1944 at the Brandis air base. In the winter of 1944-1945. it burned down during one of the allied bomber raids.

Characteristics of A $ 6: wingspan - 5.0 m and its area - 19.62 m? aircraft length - 6.4 m, height - 2.56 m, take-off weight - 900 kg.

It is known that there was at least one more diskoplane with engines located in the fuselage behind the cockpit, which rotated contra-rotating pusher propellers through elongated shafts. The propellers were installed in cutouts in the rear of the round wing. Two small keels with rudders, ailerons and elevators on the trailing edge of the disk were used as controls.

One of the developed REACTIVE DISC plans had a vertical

center building

TRD, a similar engine was, in particular, created at the Heinkel company. To ensure centering, the cockpit was located above the engine axis. Part of the air from the air intake channel was supplied to the engine, the combustion products passing through the exhaust channels, mixed with the ejected COLD air in the OS: the new channel and from the flat jet nozzle were thrown out. The lateral jet rudders were designed for directional control, and the outlet sections of the jet nozzle deflected up or down served as elevators.

In 1939, G. Focke developed the design of a vertical take-off and landing apparatus that combined the qualities of an airplane and a helicopter.

The device was a diskoplane with a triangular tail section of the hull, on the trailing edge there were ailerons, flaps and a keel with a rudder. Inside the housing there was a vertical channel in which two coaxial two-blade rotors were installed, rotating through an elongated

ÿ shaft and gearbox from a turbojet engine. The engine nozzle was connected by channels with two additional combustion chambers (prototypes of afterburners), combustion products through exhaust nozzles

Diskoplane A$b in the hangar

A56 with engine hood removed

A56, front view

put in,

sa shortened“

"Flying saucers" of the cameras were thrown out. On the lower surface of the hull there were opening shutters such as shutters, the cockpit was located in the bow, the tricycle landing gear was retracted into the hull in flight.

The takeoff of the apparatus was carried out as follows. The air flow injected by the rotors exited vertically down through the open flaps, creating lift. By supplying fuel to additional combustion chambers, an increase in the horizontal flight speed was achieved, while the flaps by

jet discoplane

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a l

5 me \u003d w 02: 17 m 5 3. a. Sh 9

The "FLYING PUBS" of the lower surface were closed. The vehicle directional control was carried out by differentiating the fuel supply to the additional combustion chambers.

The disk helicopter was the Otera Pi5Kis, developed at the end of the war by designer Andreas Epp. It was supposed to be used as an attack aircraft. The device had

Diskoplane G Focke

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"FLYING SAUCERS"

"Oteza Oyofi$" launch in the form of a disk with a diameter of 19 m, in the center of which there was a cockpit with a diameter of 4 m.

_ at its ends.

The rotor was rigidly attached to the axle, like the rotors of gyroplanes. It should be noted that the constructive scheme of the torqueless rotor was applied back in 1930. well-known German designer of helicopters A. Flettner, head of Flettner GmbH. On one of his helicopters, he installed a two-blade propeller, and placed two Anzani engines with a capacity of 30 hp at its ends. With. with small propellers.

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"FLYING SAUCERS"

In addition to the main rotor, the Oteva 015Kiz apparatus had eight additional As 8A engines with a capacity of 80 hp each. With. with four-blade propellers, and each engine was installed in a vertical channel with a diameter of 3 m.

The device worked as follows. The initial spin-up of the main rotor was carried out with the help of launch rocket boosters suspended under the ramjet, and the ÿÿ 8ÿ engines were simultaneously started. When the rotor reaches

ASb with trim removed

"Epeceppae 5sreeire"

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"FLYING AUTOMATES" with a rotation speed of 220 rpm were launched by a ramjet, and the boosters were dropped. The pilot, increasing the thrust of the rotor by changing the pitch of its blades, carried out takeoff.

By changing the thrust of individual additional engines, it was possible to tilt the car in the right direction and carry out horizontal flight. In the event of failure of one of the additional engines, the machine retained sufficient control to complete the flight. When one of the ramjet engines stopped, the fuel supply to the second ramjet engine was automatically cut off, and

the pilot landed the car in autorotation mode. At low altitude, the car flew using the additional effect of an air cushion.

Several 1:10 scale helicopter models were tested in wind tunnels and free flight, and before the end of the war, four full-size prototypes of the Otera Griskis were built. The control system implemented in this project was patented after the war in Germany.

The attack aircraft U 7, developed by the group of Schriever and Habermohl in Breslau (Wroclaw), belonged to the same type of aircraft. The device had a round body in terms of a glazed cabin at the top. A multi-blade rotor rotated around the body, rotated from a ramjet engine mounted on its outer rim.

The vehicle was taken off by initial spin-up of the rotor using a ground-based launcher or launch boosters suspended under the ramjet. Upon reaching a certain number of revolutions, the main engines came into operation, and the starting device was turned off or the starting accelerators were reset. Fuel was supplied to the main engines by centrifugal forces. The lifting force was regulated by changing the angle of installation of the rotor blades, horizontal flight was carried out using two (in another version - three) turbojet engines installed under the vehicle. In the horizontal flight, the jaws were set to zero angle, the directional control was carried out by a differentiated change in the thrust of the turbojet engine,

A56, rear view

Apparatus with radial turbojet engine

The designers came to the final layout only after unsuccessful tests of 15 previous options. The prototype of the latest version of the apparatus took off on January 14, 1945 near Prague. There is an assumption that further tests of the U 7 were carried out at a secret German base on the island of Svalbard.

The most mysterious were the devices developed according to the Naiperi and Gÿÿ projects, legends arose among ufologists about the use of electromagnetic and antigravity engines as power plants for these devices, information about which the Germans allegedly received from extraterrestrial civilizations.

However, everything was much more prosaic - the vehicles of the Naiperi and Ug projects were vertical take-off and landing vehicles with a turbojet or theater engine located inside the body of the apparatus, creating a downward air flow.

The “NaipeBi” apparatus resembled a high-crowned hat in its shape. The crown was the inlet of the air intake, and the cockpit was also located there. In one version, a turboprop engine was located vertically under the inlet, rotating one multi-blade rotor or two coaxial rotors (in one of the models of this version, the VMU 028 engine was used). In another version, instead of a TVD, there was a starting motor for the initial spin-up of the rotor, and its main rotation was carried out using a ramjet engine installed on it, while fuel was supplied to the engines due to centrifugal forces. Variants with a vertically located turbojet engine were also developed and studied.

The exit of air or its mixture with combustion products from the body of the apparatus was carried out in various ways. As a rule, in small apparatuses, the jet flowed out through a nozzle located on the axis of the apparatus, and thereby created a lifting force. Horizontal flight was carried out due to the deviation of the outlet section of the nozzle from the axis in one direction or another.

For large-sized vehicles, the nozzle that created the lifting force was annular. It was formed by a profiled gap between the body of the apparatus and the bottom in the form of a central disk with edges bent downwards. To carry out horizontal flight from below, sustainer turbojet engines were installed on the bottom. The directional control was carried out either by differentiating the thrust of the sustainer turbojet engines or by deflecting the engine nozzles.

Of the developed projects of the Naiperi series, the Naipebi-Sh had the largest dimensions, the diameter of which reached 71 m. It was supposed to arm it with four 110 mm caliber guns, ten 80 mm caliber guns and six MK 108.

At the end of 1944, a group of designers led by V. Schumann worked on the projects of disk devices "Ygi" - Tazeg (the first flight of a prototype, presumably, took place on February 19, 1945) and "YgiSh" -7etsioger, which It was supposed to be armed with one 80 mm cannon, two MK 108 cannons and two MS 17 machine guns.

It should be noted that the maximum speeds (from 2,000 km/h to 7,000 km/h) attributed to disk vehicles of the Second World War by some aviation historians (mainly German) are in fact several times overestimated. The level of development of German engine building at that time was such that the dream of one of the pioneers in the development of supersonic aircraft, Professor A. Lippisch, was to achieve a maximum speed of 2000 km/h.

Higher speeds (up to 3500 km/h) were achieved only by the A 4 (U 2) missiles developed by W. von Braun, with which the Germans fired at the cities of England, France, Belgium and Holland. But it must be borne in mind that such a high flight speed was achieved within a very short period of time - time

Prototypes of disc-shaped vehicles in flight

"FLYING SAUCERS" The flight time of the rocket was only about 5 minutes. The operating time of the powerful liquid-propellant rocket engine with which the rocket was equipped did not at all exceed 60–70 s. Attempts by German scientists and designers to create devices capable of flying for a long time at a speed many times higher than the sound speed ended by the end of the war only with the development of the concept of a hypersonic bomber by 9. Senger. Until the end of the war, this fantastic cockpit, dvuhfyuzechesky FOR THAT times, the concept and the beach aircraft could not be brought to life.

ÿÿ 635 It is known that after the end of the war disk aircraft were developed by the aviation firms of the victorious countries. First of all, these vehicles were of interest to the military. The Disk has excellent rigidity characteristics, good stability during vertical climb, low aerodynamic resistance, and a large internal volume for accommodating equipment, fuel and payload. However, the main advantage is that the disk has a minimum effective reflection surface when it is irradiated by a radar. This circumstance is very important in the creation of "invisible" aircraft. That's why all the work on

disc devices were classified.

In 1954, the American company Lockheed patented the design of a disk-shaped aircraft developed by it, and the British company Augo Aircraft began developing

"flying saucer" \U7-9U commissioned by the US Air Force. It was assumed that the results obtained during the creation of this experimental apparatus of the double-body re-cabina would be used in the development of #29020 aircraft carrier-based "flying saucer" for the Navy ÿi 635 with a diameter of about 30 m.

The disk apparatus U7-9U had a diameter of about 6 m, inside its body a multi-bladed rotor was located on the axis. The rotor with a diameter of 1.5 m through a special drive was rotated by three turbojet engines, the nozzles of which were located on the edge of the disk. The device could perform vertical takeoff and landing, horizontal flight was carried out mainly on

 at a height of 2.5-3 m using the effect of an air cushion, at high altitudes the device became unstable. U7-9U was studied for several years, in 1961 the project was terminated. By that time, 10 million dollars had already been spent on it,

In 1957, a disk-shaped aircraft was patented in England. Later, disk-shaped devices developed by designers from different countries began to fly: the French R. Cousine, J.-R Petit and M. Viton, the Austrian H. Jordan, the Japanese G. Michiharu and S. Ichiro, the American P Moller and others.

Devices found at the crash site of one of the German flying saucers

Work on disk-shaped devices was also carried out in the Soviet Union. In 1950-1962. Three discoplan gliders were built and tested (including two Sukhanovs. — Ed. note): two were used to study aerodynamic characteristics (one of them even performed a complex of complex aerobatic maneuvers), and the third, with a solid propellant rocket engine, to study the behavior of a discoplane at supersonic speeds. In 1959, V. Burdakov and Yu. Danilov developed a project for a diskoplane with a diameter of 500 m.

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Annex 1

Structure of the Luftwaffe

The main tactical units of the newly created German Air Force (Luftwaffe) in 1935 were: a squadron (Cesspzhayer), a group (Sgirre) and a squadron (51a e!). Each squadron consisted of a headquarters unit and three or more groups, the number of aircraft in it ranged from 100 to 120. He commanded the squadron Sesshuaaegkottoyaog.

Squadron designations: - fighter (Jardreÿsÿchÿayeg) - ÿÿ - night fighters (MaspuaedeezsNugadeg) = ÿÿ - heavy fighters (Legÿÿogÿÿÿÿÿÿÿÿÿÿ) - 25 - attack aircraft (ÿÿÿÿÿÿÿÿsÿtuayeg) - 56 (since 1943), SE h.S (until 1943) - night attack aircraft (No. asÿÿÿsÿasÿdeÿsÿÿÿadeg) - No. 6 - bomber (Katrÿvezspuga4eg) - KS - high-speed bombers - 5KS (SsÿpePkatrÿreÿsÿÿÿÿÿÿÿ) - dive bombers -566

(Sÿshgkatrÿresÿshuaaeg, $iKaveÿsÿuayeg)

- transport aviation (Tgaprogÿreÿshuaaeg) - TO (since 1943), KS20U (until 1943)

- combat training (ÿÿgreÿsÿuaaeg) - [6

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Each group, which included 40-50 aircraft, consisted of a headquarters flight and three or more squadrons. The group number was indicated by a Roman numeral, the squadron designation was written through a slash, for example:

- IS27 - the first group of the 27th fighter squadron; - PIKS 40 - the second group of the 40th bomber squadron.

The group was commanded by Stirrepkottoyaog. Unlike the above types, reconnaissance and naval aviation were divided directly into groups, in addition, there were special purpose groups:

- close scouts (MavaoYaagipez8garre) - MA.Og. - long-range scouts (Eegpai agipezegarre) - RAbg. - sea scouts (beeaiagipezegirre) - $A.bt.

- night scouts (Masai agipyazegirre) - A.Sg.M#asÿÿ

- carrier-based aviation (Vogaÿÿeregogirre) - BE. g. - coastal aviation (Kizep ezegegarre) - KiE.g. - test (EgrgoBip $ ogirre) - EE. - preparation of reinforcements (Egzaphipezetarre) - His.bg. - glider - 5 Cherregarre

The first group included the 1st, 2nd and 3rd squadrons, the second group - the 4th, 5th and 6th squadrons, etc. Squadrons, which included from 12 to 16 aircraft, marked like this:

- 1/6 27 - 1st squadron of the 1st group of the 27th fighter squadron;

— 7/KS 76 — 7th squadron of the 3rd group of the 76th bomber squadron.

The squadrons, in turn, were divided into: pairs of aircraft (Koye), units of 3-4 aircraft (Ketse) or units of 5-7 aircraft (Skuyagt).

On the eve of World War II, Germany had:

- 1180 bombers in 30 groups (18 groups - Not 111.11 groups - Oo 17, one group - ÿo 86);

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- 771 fighters in 13 groups (12 groups - Me 109, one group - Ag 68);

- 336 dive bombers in 9 groups (ÿi 87);

- 408 heavy fighters in 10 groups (Me 109 and Me 110);

- 40 attack aircraft in one group (ÿ $ 123);

- 552 transport aircraft in two groups (Jo 52);

- 379 long-range scouts in 23 squadrons (ro 17);

- 342 close scouts in 30 squadrons (He 45, He 46, H $ 126);

— 240 naval aviation aircraft in 14 coastal, two ship and two transport squadrons (Na 139, He 59, Oo 18, Ro 24, Ro 26).

Annex 2

Aircraft markings

Until 1935, military aircraft had the marking adopted by the KIM to designate all aircraft manufactured by the 4-air industry, starting with the first prototype. This marking looked like this - the letter “O” (national identity), a dash, four letters, for example: ROT, O-EEIM, r-OpU\, O--AAMA, etc. d.

The first letter after the dash indicated that the aircraft belonged to a certain class (A1, A2, BI, B2, C1 or C2):

Y-A1 1-B1 0-C E-A2 O0-B2 A C2

The classes differed in the following parameters: the number of crew members, the flight weight of the aircraft, landing mileage, the number of engines in the aircraft.

Class Crew Flight Sample, m Number Weight, kg Motors ÿÿ up to two up to 500 up to 300 1 A2 up to three up to 1000 up to 450 1—2 ÿÿ up to three up to 2500 up to 450 1—2 up to three up to 1000 over 450 1—2 B2 up to six up to 2500 over 450 1-2 C over six over 2500 over 450 1

ÿ2 more than six more than 2500 more than 450 several

In naval aviation, the classification differed from the usual one only in terms of the weight parameter: A1 - up to 600 kg, A2 - up to 2200 kg VI and B2 - up to 5500 kg, CI and C2 - over 5500 kg,

A combination of the following three letters of the code meant: destination group (H, C, R, K, $, K), load, landing conditions (for seaplanes), etc.

Destination group division:

N - experienced and record aircraft C - transport aircraft

P - passenger aircraft

K - private jets

$ - training aircraft K - aircraft for aerobatics

With the advent of the Luftwaffe, the following marking system for military aircraft was introduced: two numbers, a cross, a letter, two numbers. The marking was applied in black on the fuselage and on the wing panels.

The first digit denoted the air district (ÿlÿÿteÿÿ-kottapao), into which the territory of Germany was divided at that time, there were six such districts in total:

D - Koenigsberg P - Berlin

W - Dresden TU - Munster U - Munich UG - Kiel

The second figure meant the chronological sequence in which this or that squadron was created in the given district. The first two digits were followed by a cross - the designation of the nationality of the aircraft. The letter to the right of the cross denoted the aircraft number within the squadron. The next digit was the group number, the last digit was the squadron number.

Example: aircraft He 51 from the 132nd fighter squadron] C132 "Kÿÿÿ:ÿÿÿÿÿ" could carry the designation 21 + A25, i.e.

2 - air district P, Berlin

1 - JC 132, the first squadron formed in district 1

+ - PLUS 6

A - letter number of the aircraft

2 - P group, £6 132

5 - 5th squadron,] C 132

Fender markings: +21, 425+

Example: aircraft ÿi 87A from $ 1.C 163 could have the code 52 + E26, i.e. e. 5 - air district U, Munich

2 - 51.6 163, the second squadron formed in the U district

+ - cross

E - letter number of the aircraft

2 - P group, $6,163

6 - 6th squadron, EU 163

Fender markings: +52, E26+

Naval aviation had its own marking features, the first position in the code was the number 6, since all naval aviation units were assigned to district M], and the second position was the number 0, i.e. because this aviation was organizationally divided not into squadrons, but into groups.

Example: the He 59 aircraft had the designation 60 + B73, i.e.

6 - Air District MI, Kiel

0

+ - plus

B - letter number of the aircraft

7 - Ki. E.g. 706, 7th group, formed in district UI 3 - 3 squadron, Ki.E |.Sg. 706

In fighter aviation, the marking system additionally used color zones on the surface of the aircraft (engine cowling, longitudinal stripe in the upper part of the fuselage, transverse stripe on the tail section of the fuselage, etc., e). A certain color meant the number of the fighter squadron:

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black - £131 red - £132 brown - £134 green - £232 BLUE - £6233 orange - £234

Since the middle of 1936, the marking system in fighter aviation has changed. Now each aircraft in the squadron had a number from 1 to 12, white with a black outline, located in the forward part of the fuselage and on each wing console above and below. Squadron numbers were designated by color zones:

- 1st, 4th and 7th squadrons did not have color zones;

- 2nd, 5th and 8th squadrons had a white stripe around the engine hood and a colored tape around the rear fuselage;

- 3rd, 6th and 9th squadrons had a white circle on the engine cowl and on the tail tape.

Squadron commanders flew machines with number 1, no other additional differences had.

Groups within squadrons had symbols applied on the sides of the fuselage between the number and the cross:

- 1 troupe did not have a symbol; - P group had a horizontal straight stripe; - III group had a horizontal wavy stripe.

On squadron and group headquarters aircraft, instead of the number, a combination of chevrons and stripes was applied (black with white edging on a light background, white with or without black edging on a dark background). These combinations varied widely in different units and depended on the tastes of the PILOTS.

The planes of the Condor Legion, which took part on the side of the Francoists in the civil war in Spain from 1936 to 1939, were marked in a special way. The cross “St. Andrew", inflicting

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black on the white-painted rudder and white on the black circles located above and below on the wing near the tips. On the sides of the fuselage there was a black circle, sometimes with a white cross “St. Andrew". To the left of the circle, a digital code was applied in black, indicating the type of aircraft:

- 2 - He 51 fighters, which was equipped with].88 Ozvavgirre 88);

- 6 - fighters BE 109 (7.88);

- 14 - long-range reconnaissance aircraft Oo 17 from the group of reconnaissance aircraft A.88;

- 19 - close scouts H $ 126 (A.88);

- 22 - transport aircraft ÿa 52/31;

- 25 - He 111 bombers, which formed the basis of K.88 (Katrisgirre 88);

- 27 - long-range scouts Not 70 (A.88);

- 29 - dive bombers ÿi 87, transferred from the 1st squadron of dive bombers formed in Germany 8.6 163 "iiteitali";

- 46 - close scouts Ei 156 (A88).

The numbers to the right of the circle meant the serial number of the aircraft of this type in the Legion.

Some aircraft had additional personal markings. For example, the plane of squadron commander Ghandrik from 2./].88 had a white letter "H" on a black fuselage circle, his plane had the designation "6.56".

Spaniards flew as part of some bomber crews, such machines had an additional designation "REOVO", which was applied on the nose of the aircraft with an additional number under it, for example: REPCO 3.

In early 1938, the fighter marking system changed again. The old squadron colors were abolished, and the squadrons within the groups received their own color designations:

1 - white

2 - red (in 1939-1940 - black) 3 - yellow

Aircraft numbers moved to the cross and were in squadron color, but there were exceptions: some Messerschmitt fighters had small numbers above or below the group symbol, aircraft from 1/]C 1 retained numbers on engine cowlings as early as 1939 g, and BE 109E aircraft that fought against the USSR - until mid-1941

After the cross was the symbol , denoting the number of the troupe within the squadron:

- 1 troupe - the symbol was missing;

- P group - horizontal straight line;

- III group - a horizontal wavy line (since 1941 - a vertical line).

However, aircraft with a wavy line flew in some parts in the winter of 1944/45. In squadrons where [At a group] were added, the aircraft of these groups were marked either with a small cross or a circle.

The belonging of a fighter to one or another squadron was determined by the emblem located on the fuselage; the existing types of emblems will be described below. The aircraft of squadron and group headquarters units retained the numbering in the form of a combination of chevrons and stripes.

In 1940, in connection with the reorganization of the Luftwaffe, there was a change in the aircraft marking system (with the exception of fighter aircraft). All cars began to be marked with a four-digit code consisting of three letters and one number. The combination of a letter and a number to the left of the cross meant the number of the squadron, the decoding of the squadron codes is given in the table (for some squadrons, the serial number of its formation is given in brackets):

A1 - KS 53 "eriop Con4og" AE - KO 200

A5 - 516 1/56 1

Ab - EA.Sg. 120

Vz - KS54 "epcor" (1 form) C1 - EKottapao 16

(2 - MA.Og.41

C8 - T6 5

C9 - No. C 5

pi - 5A.SE. 126

05 - No. 3 (1 form.)

p9 - Maya Mnoopmerep / MS 7 E2 - E.51ee Keshinp

E3 - E.$1eie Keship

E1 - KS 76

EI - 8:6 76 (1939-40)

Eb - RA.Sg 122 (1 form)

E7 - FOR Cr. 130

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E8 - KS 40 (2 forms)

C1 - KO 55 "Spiegep"

62 - EA SG. 124

66 - Kr2by 2

69—#61

69—#64

69-761 (1 form)

NI - MA.Og. 12

H4 - Ia apaivesspzhaadeg 1 H8 - MASg. 33 (1 forms)

74 - Tsgabe! 5

]9- 9.65 (1942-43)/56 5 Kb - KiESg.406

K7 - A.Sg.M#asÿÿ

I - 16 1 (weather reconnaissance) 12-102

15 - KSg2YU 5

M2 - Ka E.0g / Ksg. 106

M7 - Ki. R.bg/KOg. 806

M8 - 70 76 (2 forms) R1 - Kb 60

P2 - MA.Sg. 21

P5 - Tmanz-Oseap 5aHe!

$2 - 956 77/567

$3 —T6g. thirty

$4 - KiE.0g/Kbg. 506

$7 - 816 3/56 3

59 - Ebe / 5KS 210

TI - MA.Og. 10 "Tappeprigr" TK - VE. 0g, 196

T5 - EA.Cr. OBAG.

T6 - 5.6 2 "Nateilap" / $ C 2 T9 - ÿersishuegrapa Oba. 05 - KS 2 "Noigkatteg" 08 - 26 26 "Nogzhg Zhezzey (1 form.)

y4 - COP 1 "Nipaeprigo"

ÿ7 - MA.ÿÿ. 32

\/7 - MS 100 A2 - 26 52

X4 - 7eyoigygaprogyÿgaÿe! 222 76 - COP 66

16 - COP 27 "Voisk"

ÿÿ —— KS 26 "ÿÿÿ"

1K - No. 6g.4

1T-KOg. 126/KS 28

12 - Kbg.U 1/16 1 (1 form.) 2E - KS 54 (2 form.)

2ÿ - Uegsisÿÿÿÿÿÿ! 210

2] - 261 (3 forms)

2#— 76 76 (2 forms) 25—76 2 (2 forms)

27. - ÿÿ6

3C - MS 4 (test center Rekhlin) (from January to July 1943 - No. C 6) 3E - KSb

3] - ÿÿ 3 (2 forms)

ZK - Mÿpepsisÿogirre (min

naya)

ZM - 262 (1 form.)

30 - 76 26 "Oh yes!" 3% - ÿ.bg. eleven

37 - KS 153/KS 77

YES - 1/26 26 "Nog Zhesse" 4p - KS 25 / KS 30 "Aaleg"

DE - MA.Og. 13

43 - MA.Sg. 22

4 - PI / No. 6 2

4T - Menegegkipaiprÿgabe! 51 40 - EA.From. 123 (airborne)

4U - KSg2BU 172/TS 3

50r - MA.Sg. 31]2 - MA.Cr.5 5E - MA.Cr. 14

5] - CS 4 “Sepega! \Usuer"

5K - KS 3 "Vl"

5M - EA.Sg. 122 (2 forms)

5T - KS 101

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52 - Zecegekipaiposia Not! 26 7K - ZA.Sg. 125

66 - $56 51, 3/5161 7T - Kg 606

61 - KOg2YU 108 / TC 20 7U - KOGLBU 700

bK - M#A.bg. 41 (2 forms) 8N - MA.SSg. 33 (2 forms)

63 - Kbg./KS 100 81 - Ki.E.bg. 906

6K - $A.Sg. 127 8T - Kst.26U 800/76 2

60 - 76 1 (2 forms) 8U - No. C 200

6\/ - $A.bt. 128 EC - KS 51 "Eyeiuuuiiiss"

7A - EA.St. 121 9U - RA.bg.5 (transoceanic) 9% - MS 101 (connection 7) - - MAS 102 84 - NOISE b2 experimental aircraft)

The letter located to the right of the cross meant the number of the aircraft in the squadron (letter number), it was often painted or had a squadron color outline: white, red or yellow. The aircraft of the headquarters units of the groups were designated with a green letter, and the headquarters units of the squadrons - blue. The letter "A" denoted the machines on which the squadron commanders flew. In transport groups, which usually had four squadrons, and in reconnaissance groups, which could have up to six squadrons, the coloring of the third letter of the code often did not correspond to the accepted marking system.

The extreme letter on the right denoted belonging to one or another unit within the squadron:

A - squadron headquarters B - headquarters | Group C - Headquarters P Group B - Headquarters W Group E - Headquarters GU Group E - Headquarters U Group H - 1st Squadron K - 2nd Squadron I. - 3rd Squadron M - 4th Squadron No. - 5th Squadron

R - 6th Squadron K - 7th Squadron

5 - 8th squadron

T - 9th Squadron 0 - 10th Squadron U - 11th Squadron U - 12th Squadron X - 13th Squadron U - 14th Squadron 2 - 15th Squadron

In order to avoid possible misunderstandings when identifying the aircraft, the letters “C”, “1”, “]”, “O” and “O” were excluded from the above list.

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The code was located on the fuselage and on the lower surface of the wing, for example: ZM + ÿÿ. (aircraft from composition 26 2) on the fuselage and 3 + M Jn. on the wing. However, during the Second World War, more and more deviations from the accepted marking system were observed, for example:

- only the last two letters of the code could be applied on the wing;

- only the letter number (outside of the cross) was applied with wing tips, the designation of the unit was located on the nose of the aircraft;

- the first] and 87B, in addition to the fuselage code, had small white numbers on the engine cowl and on the wheel fairings of the chassis, presumably, they indicated the number of the link (Keme) in the escalrille, sometimes the aircraft number was placed on the fairings;

— transport aviation aircraft often had markings on the keel, sometimes on the fuselage.

Aircraft from the attack squadrons $sÿ.ÿ 1 and ÿÿÿ.ÿ 2, which fought on the Eastern Front in 1941-1942, were marked in a special way. Each of these squadrons consisted of two groups (four squadrons in each group). The aircraft had an individual lettering number painted in the colors of the squadron:

1st Squadron - White 2nd Squadron - Red 3rd Squadron - Yellow 4th Squadron - Blue

In addition to the letter number, on the other side of the fuselage cross, a badge was applied in the form of an equilateral black triangle with a white border (sometimes it was applied with a white outline on the paint background). A certain arrangement of the triangle and the letter relative to the cross meant the number

groups:

- 1 troupe - triangle, cross, letter;

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- Pgroup - letter, cross, triangle.

Reconnaissance aircraft were marked in the same way.

By the end of the war, deviations from the adopted marking system were widespread: bombers were often observed, which had only a letter number on the fuselage, and aircraft and squadron numbers were applied in small letters on the fin. Aircraft from the KS 40 carried a small four-digit code on the keel, and only one or two letters were located on the fuselage. Rho 217M bombers, in addition to the last two letters of the code on the keel and

lettered on the fuselage often had a small white serial number on the nose.

From the beginning of 1944, bombers began to appear, which, instead of the usual four-digit marking, had a large white digital number located on the keel and duplicated on the lower surface of the wing. The exact purpose of this additional marking is unknown, but there is an assumption that in some parts the aircraft number was indicated in this way.

Transport aircraft ÿi 52 often had an additional symbol - a black triangle with a white border. These triangles were located on the keel above the image of the swastika, as well as on the leading edges of the wing.

Sometimes aircraft with a four-letter code were observed in the troops: two letters, a cross, two letters. It was the VGM code changed at the very beginning of the war, assigned to experimental (military and civil), serial civil and serial military (only at the stage of factory testing) aircraft. The reasons for the presence of aircraft with such markings in the troops were various, for example:

— the passage of experimental aircraft military tests (for example, E 19053 with the code O0 + 0C entered the Luftwaffe for testing in 1943);

- secondment of civilian aircraft of the Kluftwaffe (for example, EM 200V-2, property of Lufthansa, with a hundred

eye VGM-code 2-A $ NN carried out the tasks of the command until the end of the war);

— distillation of new aircraft from the factory by crews from combat units with subsequent immediate participation in combat operations

ACTIVITIES; - the use at the end of the war of aircraft flying schools and

civil aviation enterprises in hostilities due to

lack of military equipment; p - the use of a civil code on military rescue aircraft of naval aviation for the purpose of disinformation

enemy matii, etc. d.

Appendix 3

Emblems and badges

For the first time, the emblems on Luftwaffe aircraft began to appear during the war in Spain, they were sometimes placed on the black fuselage circle, sometimes under the cockpit or after the number

aircraft. So, for example, all four squadrons].88 had the following emblems:

1./].88 - diving raven 2./].88 - high-crowned hat 3./188 - figure of Mickey Mouse 4./].88 - ace of spades

Emblems also began to be used on bombers. For example, the aircraft “25.15” had an emblem on the fin, which depicted the favorite dog of the crew commander (Scotch Terrier) with the dates of its birth and death written, in addition, a diving condor with a bomb in its claws was depicted on the black fuselage circle.

This tradition was preserved during the Second World War, many squadrons, groups and even squadrons had their own emblems, which were drawn in the nose of the aircraft or on board under the pilot's cockpit light:

5 2 "Vsmpo" - a shield with the image of the letter "E" ÿA 3 "Tsaeh" - a stylized letter "O"

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© 26 "5sShavaeg" - a shield with the image of a snake in the form of the letter "5> ÿÿ 51 - a circle with the image of an eagle's head

JC 53 "Rik Az" - ace of spades

JO 54 Stipeggt - green heart

Aircraft victory marks first began to appear during the fighting in Spain, and this practice was continued during the Second World War.

In fighter aircraft, victory vertical stripes were applied on the vertical tail of the aircraft in a row (on a light background - black or red, on a dark background - white or yellow). Often, under each stripe, a small icon was drawn in the form of the national identification mark of the downed aircraft. Sometimes a certain number of victories was indicated by a special badge, the shape of the badge was completely determined by the individual tastes of the pilots: miniature knight's crosses, oak leaves, crossed swords, eagles

it. d.

In bomber aviation, vertical stripes, dots, and sometimes small silhouettes of hit targets (ships, factories, barrage balloons, etc.) were used.

On attack aircraft, marks were used in the form of small silhouettes of tanks, armored vehicles, etc. At the end of the war, in addition to victory marks, badges began to be drawn on the fuselage, corresponding to award signs in the infantry and mountain rifle units (chapepe ZagtaBhesVen) for participation V
multiple attacks.

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